CURRENT HOUSING RESEARCH

Social, Economic and Technical Research

Volume 13, Number 2
Winter 2006-2007

Canada

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HOME TO CANADIANS

CMHC—HOME TO CANADIANS

Canada Mortgage and Housing Corporation (CMHC) has been Canada's national housing agency for over 60 years.

Together with other housing stakeholders, we help ensure that Canada maintains one of the best housing systems in the world. We are committed to helping Canadians access a wide choice of quality, affordable homes, while making vibrant, healthy communities and cities a reality across the country.

For more information, visit our website at www.cmhc.ca

You can also reach us by phone at 1 800 668-2642 or by fax at 1 800 245-9274.
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CURRENT HOUSING RESEARCH

Volume 13
Number 2
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Issued also in French under the title: ***Recherches courantes sur l'habitation***

Publié aussi en français sous le titre: ***Recherches courantes sur l'habitation***

2007-02226/

INTRODUCTION

Under Part IX of the National Housing Act, the Government of Canada provides funds to Canada Mortgage and Housing Corporation to conduct research into the social, economic and technical aspects of housing and related fields.

Current Housing Research is compiled and produced two times a year by the Canadian Housing Information Centre. This publication provides information and access to research which is undertaken and sponsored by the Corporation. It is also available on CMHC's web site at http://www.cmhc-schl.gc.ca/en/corp/li/horetore/horetore_004.cfm

The publication contains information on completed research reports, new publications, videos and bibliographies, as well as planned and ongoing research projects. An alphabetical title index of items listed is included at the end for quick reference.

The overall arrangement of "*Current Housing Research*" is by broad subject category. Within each subject category, lists of planned and ongoing projects and completed research reports are described.

Each entry can contain the following elements:

- The project or report title;
- A description of the project or report results;
- The CMHC Project Officer who is managing the project;
- The Division within CMHC which is responsible for the project;
- For External Research Projects, the grant recipient undertaking the research;
- A Contract Identification Number (CIDN);

- The Status of the project: whether the project is in a planned, ongoing or completed phase. "Planned Projects" are those that are not yet underway, but are likely to be initiated in the current year. "Ongoing Projects" refer to research projects which are currently underway. No reports are yet available. Once the project is completed, and a report is available for distribution, it will be listed as a "Completed Report."

- Whether the report resulting from the research project is available and the address where the completed report can be obtained.

To discuss research projects that are recent or ongoing, please call CMHC General Inquiries at (613) 748-2000 and ask for the CMHC Project Officer identified under each project description.

ACQUIRING THE PUBLICATIONS AND REPORTS CITED AS COMPLETED

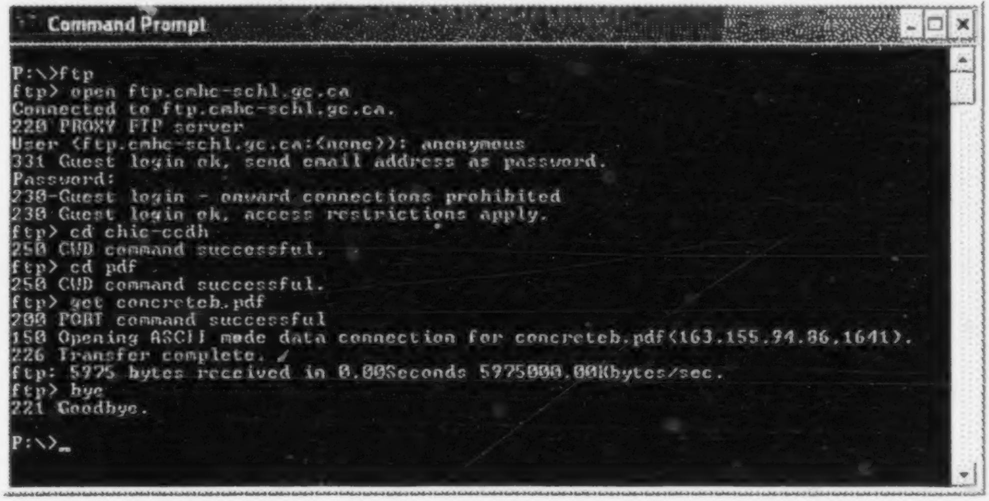
The availability section of each completed entry indicates the contact to obtain the item and whether the item can also be found on the Internet. Most items are available from the Canadian Housing Information Centre and can be ordered by using the information on the order form on the next page. We accept orders by regular mail, fax, phone, and via the Internet.

A number of the items cited are available electronically and the URL is included in the listing. CMHC uses an FTP (File Transfer Protocol) server to distribute reports. FTP has been used on the Internet as a means of transferring files between servers and users for many years and it continues to enjoy very wide use today.

In order to access a file using FTP, software with FTP capabilities is required and there are 3 types of FTP software:

1. Command Line FTP - FTP commands can be entered from a Command line or "DOS Prompt" on all Windows PCs;
2. FTP Client - a purpose built application to connect to FTP servers. These are widely available as commercial products or as shareware or even freeware on the Internet.
3. Some (not all) web browsers - Internet Explorer and Netscape can be used to access FTP files. They use correct protocol when ftp:// is entered in the address bar of the browser. Example: **ftp:**//ftp.cmhc-schl.gc.ca/

Here is an example of using the command line to retrieve a file from FTP.
FTP commands and help are available on PCs



```
P:\>ftp
ftp> open ftp.cmhc-schl.gc.ca
Connected to ftp.cmhc-schl.gc.ca.
220 PROXY FTP server
User (ftp.cmhc-schl.gc.ca:(none)): anonymous
331 Guest login ok, send email address as password.
Password:
230-Guest login - onward connections prohibited
230 Guest login ok, access restrictions apply.
ftp> cd chic-ccdh
250 CWD command successful.
ftp> cd pdf
250 CWD command successful.
ftp> get concreteb.pdf
200 PORT command successful
150 Opening ASCII mode data connection for concreteb.pdf(163.155.94.86.1641).
226 Transfer complete.
ftp: 5975 bytes received in 0.00Seconds 5975000.00Kbytes/sec.
ftp> bye
221 Goodbye.

P:\>_
```

CURRENT HOUSING RESEARCH ORDER FORM

If you wish to receive any of the completed reports or research highlights listed, or if you would like to be on the mailing list to receive *Current Housing Research*, please fill out this form and send it to:

Canadian Housing Information Centre
Canada Mortgage and Housing Corporation
700 Montreal Road
Ottawa ON K1A 0P7
Fax (613) 748-4069
Telephone 1-800-668-2642
Email: chic@cmhc-schl.gc.ca

COMPLETED REPORTS REQUESTED

☐ Send copies of above reports, research highlights

☐ Add my name to your mailing list to receive *Current Housing Research*

Name

Mailing Address (please include e-mail)

City Province Postal Code

CMHC·S EXTERNAL RESEARCH PROGRAM

The objective of the CMHC External Research Program (ERP) is to encourage and enable researchers in the private and non-profit sectors to put forward and carry out relevant, innovative, and high quality housing research projects. Under the Program, financial contributions are made annually to support research investigations into important questions, problems, and issues affecting Canadian housing. CMHC is interested in receiving applications on topics related to existing CMHC housing research.

Applicants to the External Research Program must be Canadian citizens or have permanent resident status in Canada.

Independent researchers as well as those employed in Canadian universities, institutions, private consulting firms, the professions and the housing industry may apply for these grants.

Full-time students at the graduate or under-graduate level are not eligible to apply. Students may be hired to assist in conducting the research, but under no circumstances may they take over responsibility for the direction of the work or the quality of the final report.

Individuals who are full-time federal, provincial or municipal government employees may apply. However, to be eligible, an applicant must apply as a private consultant, and the proposed research must not be part of, or interfere with his/her regular work. CMHC employees are not eligible to receive grants under this Program.

To obtain the Guidelines and Application Form (product #62964):

- ☐ visit our Web site at http://www.cmhc-schl.gc.ca;
- ☐ e-mail: erp@cmhc-schl.gc.ca; or
- ☐ call 1 800 668-2642.

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TECHNICAL RESEARCH

ASSISTING FIRST NATIONS TECHNICAL SERVICE PROVIDERS TO ORGANIZE AND REGULATE THEIR INDUSTRY

With this project CMHC will participate on Canadian Home Inspectors and Building Officials (CHIBO) Phase 2 which will involve a comparative analysis of training material as it relates to national occupancy standards; the development of a certification model; and the development of an accreditation model.

CMHC Project Officer** : Alain F **Croteau CIDN : 26971500
Division : Assisted Housing ***Division*** STATUS : Ongoing
AVAILABILITY : Product is not yet available

CAPITAL REPLACEMENT PLANNING MANUAL & PRESENTATION MATERIAL - ON RESERVE

This project will support On-Reserve Housing. The overall outcomes will be: the Capital Replacement Planning manual and training material will provide guidance and training to On-Reserve Housing Providers and help them to maintain the current housing stock and ensure that the replacement of capital items are planned for and completed in a timely manner, and that Replacement Reserve Funds are adequately funded to meet these needs. The project will result in the production of a comprehensive manual on Capital Replacement Planning for First Nations. Training material based on this manual will also be produced.

CMHC Project Officer :** Fatima M Barros* ***CIDN : 29481500
Division : Assisted Housing Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

MONITORING THE PERFORMANCE OF THE SEABIRD ISLAND PROJECT

A research project has been initiated to assess various aspects of the performance of the Seabird Island Project. Performance measuring has been installed and the collection of data is underway. One house is being monitored for specific performance data on specific innovative features and components. Comparative analysis is being done with a baseline conventional house of equal size and occupant load. Data on overall energy consumption of all units in the project is being compiled for analysis. The project will be completed in 2006.

CMHC Project Officer :** Allan Dobie* ***CIDN : 32040200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

REMOTE FIRST NATION SUSTAINABLE DEVELOPMENT

Old Ulkatcho is a remote First Nation community in British Columbia with no water and waste treatment systems, and the community is not connected to the electrical grid. Because of its remoteness and lack of infrastructure, the community has a seasonal population that requires suitable housing and infrastructure for year round residency. This project is investigating the feasibility of undertaking sustainable community development that would incorporate micro-infrastructure units to provide utilities for the households. The investigation will also look at renovating existing homes and constructing new homes to high energy efficiency levels.

CMHC Project Officer :** Deborah Taylor* ***CIDN : 30581500
Division : Assisted Housing Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

See also: RETROFITTING CRAWL SPACES - FIRST NATIONS DEMONSTRATION, p. 11
Socio-economic research on Aboriginal Housing, p. 67-75

FLANKING TRANSMISSION IN MULTI-FAMILY DWELLINGS: PHASE IV

This report contains the results and analysis from four research projects spanning more than seven years. These research projects examined flanking transmission in wood framed constructions that might be used in multi-family dwellings.

The primary concern of the projects is the effect of using continuous structural elements that pass under a partition wall between two horizontally separated dwellings. Continuous structural elements such as subfloor sheathing, and/or joists, are often used in buildings that must withstand increased dynamic loading due to high winds or seismic velocities. However, these details often occur in single family dwellings so many of the results and recommendations in this report are applicable to situations where improved sound insulation is desired between rooms in the same dwelling. Also included are results of an initial investigation of flanking involving gypsum board that is directly attached to the joists of the ceiling, or the studs of a wall.

The method of small perturbations, or changes, to a common construction involving a continuous structural element was used to assess the effect of various construction details on the airborne and impact sound insulation.

Prepared by T.R.T. Nightingale, J.D. Quirt, Frances King. CMHC Project Officer: Barry Craig. Report no. B3425.1. Ottawa: National Research Council Canada, 2006. 1 loose-leaf volume + CD-ROM

STATUS : New Completed Report

AVAILABILITY : National Research Council Canada; and on loan from the Canadian Housing Information Centre

GUIDE FOR SOUND INSULATION IN WOOD FRAME CONSTRUCTION

This Guide addresses "flanking transmission" of sound through wood framed construction. Continuous structural elements and connections at the junctions of partition walls and floors provide transmission paths that by-pass the separating partition between two noise-sensitive spaces. "Flanking transmission" is sound transmission between two rooms by paths other than directly through the nominally separating wall or floor assembly. Flanking exists in all buildings and its importance in determining the apparent sound insulation (that perceived by the occupants) depends on the construction details of the walls, the floors and their junctions.

This Guide is the derivative of four industry-sponsored research projects conducted at the Institute for Research in Construction, National Research Council Canada. The focus and construction details were decided by a Steering Committee of technical representatives from each of the supporting partners. Partners included Canada Mortgage and Housing Corporation, Forintek Canada Corporation, Marriott International, National Research Council Canada, Owens Corning, Trus Joist, and USG.

This Guide supersedes the version published in 2005. This version includes estimates of the flanking due to directly attached gypsum board on ceilings, corridor walls, and exterior walls.

Prepared by J.D. Quirt, T.R.T. Nightingale, F. King. CMHC Project Officer: Barry Craig. Report no. B3425.2. Ottawa: National Research Council Canada, 2006. 103 pages + CD-ROM

STATUS : New Completed Report

AVAILABILITY : National Research Council Canada; and on loan from the Canadian Housing Information Centre

See also: SUITABLE ACOUSTIC AND FIRESTOP TECHNOLOGIES, p. 39

CONSTRUCTION DETAILS FOR RETROFITTING BASEMENTS - WEB-BASED ADVICE FOR CONSUMERS AND BUILDERS

The object of this work is to use findings of various basement research projects for the creation of web-based advice for consumers and builders. The preliminary structure of this web tool was assembled through the fall of 2002. The cost of creating the proposed web tool is significantly higher than anticipated. With the release of the Basement Guidelines text on the NRC web, CMHC has contracted with the author of the guidelines to produce summaries of parts of that document. Drafts were provided to CMHC for review in the spring of 2006, and they showed some curious simulation data. Re-analysis is ongoing. The final highlight will be posted on the CMHC site by late 2006.

CMHC Project Officer : *Don Fugler*
CIDN : 20650200
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

FROST PROTECTED FOUNDATION MONITORING PERFORMANCE FOR RESIDENTIAL USES IN NORTHERN QUÉBEC, CHISASIBI PILOT PROJECT

This external research project will monitor the performance of a frost protected shallow foundation in a harsh northern Quebec climate setting. The project will provide in-situ measured data on the performance of this type of residential foundation with in-slab-radiant-floor heating. Results will be analysed to evaluate potential improvements to insulation levels and placement and will provide guidance for builders and designers. This project should be completed by March 2007.

CMHC Project Officer : *Ken Ruest*
CIDN : 28920210
Division : External Research Program
STATUS : Ongoing
AVAILABILITY : Product is not yet available

RETROFITTING CRAWL SPACES - FIRST NATIONS DEMONSTRATION

The project will involve the retrofitting of several wet crawl spaces. The retrofits will be well-documented (e.g. video) and monitored for a period afterwards to verify effectiveness. The case studies will be used to demonstrate how to fix poorly performing crawl spaces. One demonstration may show inexpensive ways to lift existing houses and retrofit a better crawl space or basement underneath. Other possibilities include crawl space floor regrading, the use of exhaust fans to isolate problem crawl spaces, external utility buildings instead of basements, etc. The project has been prepared in conjunction with First Nations housing authorities and responds to a pressing problem found on many reserves. The project started during the summer of 2006 and will take at least two years to complete.

CMHC Project Officer : *Don Fugler*
CIDN : 33050200
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

See also: DEVELOPMENT AND ASSESSMENT OF CRAWL SPACE REMEDIATION STRATEGIES, p. 46

CODE REQUIREMENT AND COSTS OF INCORPORATING ACCESSORY APARTMENTS

The purpose of this research project is to investigate the various code requirements (building, fire, plumbing, etc.) that restrict the provision of accessory apartments in a dwelling. This project will list in plain English all National Building Code (NBC) requirements that apply to residential buildings with one principal apartment, but that differ from the requirements for a single family house. The project will recommend changes to the NBC to facilitate the construction of code-complying accessory apartments in existing houses, and assess the impact of the proposed changes on occupant safety. The project will estimate the costs of compliance with the NBC, and the costs of employing the proposed changes, for a representative sample of new and existing homes. The findings will be presented in a research report intended for the use of designers, housing providers and building officials. The report should be complete by 2007.

CMHC Project Officer : *Barry Craig* — ***CIDN*** : 28830200

Division : Policy and Research Division — ***STATUS*** : Ongoing

AVAILABILITY : Product is not yet available

COMPLYING WITH RESIDENTIAL VENTILATION REQUIREMENTS IN THE 2005 NATIONAL BUILDING CODE

The objective of this project is to update the existing publication, Complying with Residential Ventilation Requirements in the 1995 National Building Code (NBC) to reflect the ventilation requirement changes which are included in the 2005 NBC. It would also be updated to incorporate results from recent research and improved house construction techniques. A contractor has been engaged to revise and update the text and indicate what changes are required to the illustrations. CMHC would be responsible for redrawing the illustrations and the final layout. The Canadian Home Builders' Association has identified this update as a priority project on their Technical Advice and Publications list. This publication would provide builders and renovators with an illustrated explanation to describe and clarify what ventilation options can be used to comply with the 2005 National Building Code. A manuscript of the publication is expected by the end of 2006.

CMHC Project Officer : *Don Fugler* — ***CIDN*** : 35620200

Division : Policy and Research Division — ***STATUS*** : Ongoing

AVAILABILITY : Product is not yet available — ***NEW***

DEVELOPMENT OF TRANSITION TRAINING FOR OBJECTIVE-BASED CODES

Under the auspices of the Canadian Commission on Building and Fire Codes (CCBFC), CMHC is contributing to a partnership of National Building Code stakeholders to develop transitional training material for the objective-based codes which will include pilot testing. Content will provide for training on the structure, and new information included in the 2005 objective-based code, on the evaluation of alternative solutions allowed under objective-based codes (for example, using sprinklers in lieu of fire separations), on assessment criteria to allow for transferability of alternatives and their impact on other code requirements, on preparation of knowledge tests, on development of an instructor's guide, and on pilot testing. As provincial, territorial and municipal code enforcement officials have the most comprehensive information requirements, material will be developed at their level and then adapted for other stakeholder groups to meet their needs. Training material has been developed in this multi-year project. Pilot-testing is underway. The training material will be available for the various audiences in three delivery modes: Basic Awareness, Independent Learning, and Classroom/Workshop, for delivery by instructors/facilitators.

CMHC Project Officer : *Barry Craig* — ***CIDN*** : 27000200

Division : Policy and Research Division — ***STATUS*** : Ongoing

AVAILABILITY : Seminar/training is not yet available

BUILDING CODES

REWRITING TEST STANDARD CAN/CGSB-149.10 - DETERMINATION OF THE AIRTIGHTNESS OF BUILDING ENVELOPES BY THE FAN DEPRESSURIZATION METHOD

The airtightness standard used for testing houses dates back to 1986. The object of this project is to re-write CAN/CGSB-149.10, incorporating some updates and some alternative techniques. There have been no meetings up until now but there has been extensive consultation by e-mail and document review. Progress has been delayed due to the lack of consensus by committee members. A new draft of the document is available. The CGSB will be re-balloting the draft of this standard.

CMHC Project Officer : *Don Fugler* ***CIDN*** : 19710200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

BUILDING MATERIALS

CHARACTERISTICS OF EFFECTIVE WATERPROOF SEALERS FOR MASONRY

The objective of this project is to study the vapour permeability characteristics of effective sealers applied to masonry walls. The issue to be explored is not one of stopping water absorption/penetration into the masonry, since most sealer products are effective in this role. Rather, the project will assess how the sealers affect drying of the masonry. In addition, the project will explore the risk posed to sealed masonry of freeze-thaw damage if the sealers trap moisture within the masonry units. CMHC in partnership with Masonry Canada, is providing funds to the University of Waterloo to undertake this preliminary study. This phase of the project will investigate the performance of 5 sealer types on individual masonry units and small masonry panels. The project is expected to be completed by spring of 2007.

CMHC Project Officer : *Silvio Plescia* ***CIDN*** : 25610200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

DEVELOPMENT OF HIGH PERFORMANCE STUCCO FOR DURABLE HOUSING CONSTRUCTION

The objective of this research project is to investigate the opportunities to engineer a Portland cement stucco material that will limit liquid water entry on its external surface while at the same time allow water vapour to diffuse (dry) out of it. This research project considers stucco as a material component of an ideal wall system; it does not look into system performance. The effects of possible imperfections, which may occur due to prevalent construction practices, present in the wall system are beyond the scope of this investigation. CMHC undertook this work in partnership with the National Research Council of Canada, Institute for Research in Construction (NRCC/IRC). The project is complete. The report will be available in the fall of 2006.

CMHC Project Officer : *Silvio Plescia* ***CIDN*** : 27100200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

EFFECTS OF MESH AND BALE ORIENTATION ON THE STRENGTH OF STRAW BALE WALLS

This External Research Program project will investigate different variables in straw bale construction to observe their effects on the strength of the wall assembly. Factors including bale orientation, the use of a mesh over the bale, and plaster type will be examined. A final report is due in fall 2007.

CMHC Project Officer : *Don Fugler*
CIDN : 34380206
Division : External Research Program
STATUS : Ongoing
AVAILABILITY : Product is not yet available
NEW

MECHANICAL PROPERTIES OF GYPSUM SHEATHING AFTER WETTING AND DRYING

This project is a follow-up to the 2003 CMHC External Research Project "Relationship Between Moisture Content and Mechanical Properties of Gypsum Sheathing." The purpose of this study is to examine the relationship between the mechanical properties and moisture content of gypsum sheathing products (such as standard gypsum wall board, exterior grade gypsum, glass-fibre faced gypsum) for materials that have been wetted and then dried to their original (dry) state. Specific properties to be examined include: adhesion or delamination of facer material, ability of the sheathing to resist fastener pull-out, flexural strength of the sheathing, for seismic considerations and as a common index of overall mechanical integrity and water absorption. The project has been completed. The report will be available in the fall of 2006.

CMHC Project Officer : *Silvio Plescia*
CIDN : 29850200
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

NATURAL BUILDING IN THE MARITIMES

The contractor for this project visited over 20 straw bale houses erected in eastern Canada to investigate the relative success and owner satisfaction with this construction method. The buildings have been inspected for structural or moisture problems. Comfort issues and energy use are also being recorded. The contractor will summarize whether straw bale construction has a place in the future of building systems for Atlantic Canada. A seminar for the homeowners surveyed, and others interested in Maritime straw bale construction, was held in May 2006 with over 80 people attending. The report on the site visits and lessons learned during the spring meeting will be published by late 2006.

CMHC Project Officer : *Don Fugler*
CIDN : 28920218
Division : External Research Program
STATUS : Ongoing
AVAILABILITY : Product is not yet available

RELATIONSHIP BETWEEN MOISTURE CONTENT AND MECHANICAL PROPERTIES OF GYPSUM SHEATHING

The purpose of this study is to examine the relationship between moisture content and mechanical properties of gypsum sheathing products (such as standard gypsum wall board, exterior grade gypsum, glass-fibre faced gypsum). Specific properties to be examined include: adhesion or delamination of facer material, ability of the sheathing to resist fastener pull-out, flexural strength of the sheathing, for seismic considerations and as a common index of overall mechanical integrity and water absorption. The study will also determine whether hand-held electric resistance meters are suitable for measuring moisture content (accurately) or if some new apparatus or protocol is required. A second phase of the project is underway to assess mechanical properties of wetted, then dried, gypsum board sheathing. This project has been completed. The report will be available in the fall of 2006.

CMHC Project Officer : *Silvio Plescia*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 26470221
STATUS : Ongoing

TEMPERATURE AND MOISTURE CONDITION OF WOOD STRUCTURAL MEMBERS EMBEDDED IN INTERIOR INSULATED SOLID MASONRY WALLS, MONITORING OF THE GROSH BUILDING, STRATFORD, ONTARIO

Two projects were launched to monitor the temperature and moisture content of wood structural members (joists) embedded in interior insulated solid masonry walls. Houses with solid masonry walls in Kincardine, Ontario, and Wolsely, Saskatchewan that were retrofitted with interior insulation were fitted with the necessary instrumentation to monitor the moisture and temperature regimes in wood joists embedded in the masonry walls. Based on the limited monitoring conducted in the two houses, the long-term durability of the wooden members does not appear to be adversely affected by the installation of the interior insulation systems. However, there was one exception. In the Kincardine House, joist ends embedded in the stone foundation wall experienced ever increasing moisture content after the installation of the interior insulation (spray applied poly urethane foam). It was suspected that moisture wicking up the foundation wall became trapped and this raised the moisture content of the monitored wood joist end. When the insulation was removed from around the joist, the joist began to dry. This finding supports the general observation that interior insulation retrofits of solid masonry structures should only be considered if moisture issues are first addressed. The reports for the projects will be made available by June 2007.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 24290200
STATUS : Ongoing

STANDARDIZATION OF CONCRETE REPAIR PROTOCOLS

This study was initiated to address concerns raised at a round-table discussion convened by Canada Mortgage and Housing Corporation to discuss concrete deterioration and repair issues for buildings. It was generally agreed that there is no consistent approach to concrete investigations and repairs and that the development of an assessment and repair protocol would be beneficial. In achieving a concrete repair protocol, the first step is to identify the state-of-the-art and the current practice for investigation, repair and monitoring strategies. "State-of-the-Art" is considered to be the highest level of technology in the field at this time and "Current Practice" is considered to be the procedures that are in general or prevalent use by most consultants. This project will research current assessment, monitoring and repair strategies for concrete repair employed by engineering consulting firms commonly involved in concrete investigation and restoration projects. Existing protocols commonly used in the field as well as existing protocol guidelines assembled by various agencies (e.g. Canadian Standards Association) will be catalogued. This project is finished. Publication of the final report is underway. A Research Highlight is being developed.

CMHC Project Officer : *Silvio Plescia*

CIDN : 1890 0200002

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

STUDY OF POURED-IN-PLACE CONCRETE WALL PERFORMANCE IN BRITISH COLUMBIA

This study analyzes and documents performance issues associated with Poured-In-Place Concrete Wall Assemblies in the wet coastal climate region of British Columbia. Guidelines are also developed for appropriate design and construction practices. The study investigates the effects of building form, rain penetration control, air leakage control, vapour diffusion control, thermal performance, and concrete construction practices on the performance of Poured-In-Place Concrete Wall Systems.

The document in the CD was produced by RDH Building Engineering Limited. Principal investigator of the project was David Ricketts. The project team also included participants from Levelton Consultants Limited who authored and provided input on sections of the report related to concrete mix design and concrete construction practices. In addition, Dr. Don Onysko reviewed and provided comments on the hygrothermal analysis section of the study. Financial support for this project was provided by Canada Mortgage and Housing Corporation and Homeowner Protection Office. CMHC Project Officer: Sylvio Plescia. Ottawa: Canada Mortgage and Housing Corporation, 2005. 1 CD-ROM

Note: No. 05-115 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order no. 64908)

STATUS : New Completed CD-ROM and Research Highlight

AVAILABILITY : Canadian Housing Information Centre

See also: DETAILS FOR SUSTAINABILITY IN PRECAST CONCRETE, p. 33

CONSUMER INFORMATION

CREATION OF CONTENT FOR "ABOUT YOUR APARTMENT" FACT SHEETS

This project builds on the success of CMHC's About Your House series by providing consumer level information for the residents of multi-unit residential buildings. Key topics ranging from resolving indoor air quality, water penetration, occupant comfort, saving energy and water, through to security and safety are being covered. Much of the material is being developed from existing CMHC research and publications. The information will be organized into fact sheets that consumers and property owner-managers can use to solve problems in their buildings. The first 10 publications will be completed by June 2007.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 31660200
STATUS : Ongoing

DOORS AND WINDOWS

BEST PRACTICE GUIDE - WINDOWS

In partnership with Natural Resources Canada and the Homeowner Protection Office, CMHC is developing this comprehensive and practical technical advisory document for architects, engineers, builders, renovators, window manufacturers, window installers and others involved in the design, specification, construction, installation and interfacing of windows within the exterior wall assembly in both low-rise and high-rise residential construction. This document will guide the user in selecting the appropriate window performance criteria for the intended application and provide installation details to ensure the performance criteria is achieved through the effective continuity of thermal, air, vapour and moisture barriers at the interface between the window units and the wall assembly. The project is expected to be completed by the summer of 2007.

CMHC Project Officer : *Silvio Plescia*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 30870200
STATUS : Ongoing

EVALUATING THE EFFECTIVENESS OF WALL-WINDOW INTERFACE DETAILS TO MANAGE RAINWATER

Based on the need for effective window-wall interface details to manage water intrusion, CMHC is developing a Best Practices Guide for Window Installation that will be applicable to both low-rise wood frame construction and high-rise buildings. To support the development of the Guide, and the needs of the fenestration, wall cladding and flashing industry, CMHC in partnership with the National Research Council (NRC), is building a consortia of interested North American organizations to evaluate specific window-wall interface details to determine how effective they are in managing rainwater. CMHC and NRC are funding the first year of this multi-year study. The Phase 1 study will be completed by December 2006. Phase 2 of this study, funded by industry partners, is currently underway. Completion of Phase 2 is expected by spring of 2007.

CMHC Project Officer : *Silvio Plescia*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 27080200
STATUS : Ongoing

DOORS AND WINDOWS

THERMAL PERFORMANCE OF WINDOW ASSEMBLIES

CMHC in collaboration with the National Research Council, together with industry participation, is undertaking a study of the thermal performance of window installations. Current and best practice window installations will be tested and evaluated for typical wood-frame residential building construction, for different window frame materials and profiles and a variety of interior-exterior temperature conditions. The test data will then be used to validate computer models. Parametric analysis will be undertaken to examine the performance of the window-wall interfaces for different climates across Canada. The project is expected to commence early in 2007 and is expected to be completed by the end of 2008.

CMHC Project Officer : *Silvio Plescia* **CIDN** : 33180200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

WINDOW INSTALLATION COURSE - DEVELOPMENT AND DELIVERY

The objective of this project will be to develop a 'Window Installation' course. The course will be directed at those trades, or trades-persons, responsible for the installation of windows. The course will cover window installation in both low-rise and high-rise construction assemblies. The course will introduce to the installer the fundamentals in building science concepts required to integrate window and envelope performance criteria including airtightness, water-management and thermal performance (condensation resistance). It is expected that this course will be incorporated in the technical programs offered by technical colleges and continuing education programs for trades-persons. It is also expected that this course will figure prominently in a Certified Window Installers Program. This project will be contracted during the development of CMHC's Best Practice Guide - Windows. It is expected that this project will be completed by summer of 2007.

CMHC Project Officer : *Silvio Plescia* **CIDN** : 30700200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

ENERGY CONSERVATION

AIR LEAKAGE CONTROL DEMONSTRATION PROJECT IN MULTI-UNIT RESIDENTIAL BUILDINGS

This research project will assess the individual and collective impact of air sealing measures on building envelope air leakage characteristics, building energy consumption, indoor air quality and occupant comfort in multi-unit residential buildings. Air sealing products and measures will be documented for common air leakage points. The predictive capabilities of existing air leakage models will be assessed by comparing their estimates of annual energy savings with that actually achieved in practice. Currently one air leakage control project is underway. Two other projects have since been discontinued at the request of the property management due to other repair/maintenance and capital replacement priorities. The remaining project is in Saskatoon, Saskatchewan and the air leakage control work has been completed. The assessment of the costs is underway and the impact of the air leakage control measures on energy consumption will be estimated based on energy metering over the next year. This project will be completed by March 2007.

CMHC Project Officer : *Duncan Hill* **CIDN** : 30410200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

ANALYSIS OF THE IMPACT OF ENERGY EFFICIENCY MEASURES IN MULTI-UNIT RESIDENTIAL BUILDINGS

The potential for energy and greenhouse gas emission reductions in multi-unit residential buildings due to the implementation of energy efficiency measures is being assessed using the building files of the CMHC HiSTAR database. Two projects are currently underway to assess the extent to which multi-unit residential buildings must be retrofitted in order to meet 10%, 20% and 40% reductions in energy use. The studies are limited to the HiSTAR database due to the lack of available information on the total number of multi-unit residential buildings in Canada. In a related, interdepartmental project, an energy and green house gas emission simulator (BESET) has been developed by Natural Resources Canada to analyze the impact of individual, or packages of, energy efficiency measures on the energy consumption and green house gas emissions of large commercial and multi-unit residential buildings. Regional and national energy and green house gas emission reductions can be assessed by using the simulator to evaluate the impact of energy efficiency measures on the buildings in a representative building database. The two CMHC reports that are studying the retrofit potential of multi-unit residential buildings have been completed and are under review. The reports will be available by June 2007.

CMHC Project Officer : *Duncan Hill* — ***CIDN*** : 22490200

Division : Policy and Research Division — ***STATUS*** : Ongoing

AVAILABILITY : Product is not yet available

CHARACTERIZATION OF ENERGY AND WATER END-USE LOAD PROFILES IN HOUSING: LITERATURE REVIEW

CMHC, in cooperation with Natural Resources Canada, conducted a literature review of energy and water end-use load profiles, interior heat gain, monitoring and analysis methodologies in residential buildings. The project identified what data is available on energy and water end uses, research projects, data, monitoring protocols and published information relating to energy and water load profiles of housing. The study concluded that consistent, accurate and detailed load profiling data is not available for all end-uses in dwellings, particularly multi-unit residential buildings. CMHC and NRCan plan to develop a load monitoring protocol that will be used to gather data in both single family and multi-unit residential buildings in a consistent and systematic manner. Upon completion of the protocol, load monitoring projects will be conducted in dwellings across Canada. The results of the load profiling literature search will be made available in a CMHC research highlight by June 2007.

CMHC Project Officer : *Duncan Hill* — ***CIDN*** : 22010200

Division : Policy and Research Division — ***STATUS*** : Ongoing

AVAILABILITY : Product is not yet available

CMHC ENERGY EFFICIENCY CASE STUDIES MOLE HILL COMMUNITY GROUND SOURCE HEAT PUMP CONVERSION PROJECT

A project has been initiated to document, as an energy efficiency case study, the conversion of the dwellings of the Mole Hill Community to ground source heat pump systems. The project will describe the situation that led to the decision for the conversion, the design, installation and commissioning, and the post installation performance of the systems. The annual energy use of the project, after the conversion and any resultant cost savings will also be identified. The project will be completed by June 2007.

CMHC Project Officer : *Duncan Hill* — ***CIDN*** : 18990200

Division : Policy and Research Division — ***STATUS*** : Ongoing

AVAILABILITY : Product is not yet available

DESIGN SURVEY OF LOW ENVIRONMENTAL IMPACT HOUSING

This research project will provide a documentation of the best existing examples of low environmental impact housing forms (including net zero energy) to date in Canada and internationally in similar climates. The goal is to eventually establish criteria and specifications for zero environmental impact housing in Canada, develop best practice models towards achieving this goal, and ultimately demonstrate these "deep green" housing models for Canadian climatic regions. The first case study of this series will be published on the CMHC web site in 2006.

CMHC Project Officer : *Duncan Hill* ***CIDN*** : 25400200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

DEVELOPMENT OF A CONTRACTOR'S AIR LEAKAGE CONTROL MANUAL AND SEMINAR SERIES FOR MULTI-UNIT RESIDENTIAL BUILDINGS

CMHC, in consultation with members of the air barrier-air leakage control industry, will develop an air leakage control manual for multi-unit residential buildings. The manual will provide contractors with information on how and where air leakage occurs in these buildings and techniques that can be used to seal them. The goal of the project is to provide the training material necessary to support the development of an air leakage control industry that will be available to meet the needs of the multi-unit residential building sector and to promote air leakage control as a cost effective way to reduce energy consumption in buildings while addressing other issues such as building envelope durability and occupant comfort. The content for the manual was completed in July 2005. The Guide has been sent for final review by leading industry stakeholders and publication is expected by March 2007.

CMHC Project Officer : *Duncan Hill* ***CIDN*** : 32080200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

ENERGY AND WATER CONSUMPTION LOAD PROFILES IN MULTI-UNIT RESIDENTIAL BUILDINGS

This research project was undertaken to review detailed energy and water consumption monitoring data which has been collected for 34 multi-unit residential buildings. The project used the data to determine annual energy and water consumption as well as hourly, weekly and monthly energy and water use patterns. Concurrent natural gas and electricity consumption is also detailed. An analysis was undertaken to determine if there was any correlation between the characteristics of the buildings and energy or water use patterns observed. The research revealed that significant variations exist in the normalized energy and water use from building to building and that patterns in the variations were difficult to predict based on building characteristics and occupancy type.

Prepared by Ozz Energy Solutions, Inc. CMHC Project Officer: Duncan Hill. Ottawa: Canada Mortgage and Housing Corporation, 2005. 33 pages (1739 KB)

Note: No. 05-119 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order no. 64940)

STATUS : Completed Report and Research Highlight
AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/EnergyandWater%20w.pdf

ENERGY EFFECT OF SUNLIGHT CONTROL IN APARTMENT BUILDINGS

This External Research Program project will evaluate the impact of various sunlight control strategies on comfort conditions and energy use in multi-unit residential buildings. Sunlight control is important to prevent overheating which can lead to higher air conditioning costs and occupant comfort problems. Sunlight control is also required to allow for full use of solar gains to offset space heating and lighting loads. The control strategies will be assessed using computer models that can predict indoor conditions and energy loading with different architectural features such as awnings, sun shelves, lintel arrangements and other shading strategies. The final report will generate design guidelines for the control and optimization of sunlight for multi-unit residential buildings. The project will be completed by March 2007.

CMHC Project Officer : *Duncan Hill*
CIDN : 28920204
Division : External Research Program
STATUS : Ongoing
AVAILABILITY : Product is not yet available

ENERGY EFFICIENCY AND RETROFIT IMPLICATIONS OF BUILDING RECOMISSIONING SURVEY

CMHC, in cooperation with Natural Resources Canada, conducted a literature survey of the availability of recommissioning guidelines and other "tune-up" procedures for multi-unit residential buildings. The survey found that there was no single source of published information for enhancing the performance of multi-unit residential buildings via low and no-cost measures. Information was found to be available for individual measures to improve space heating, domestic hot water, lighting and appliances, building envelope and ventilation systems. Given the absence of recommissioning, or tune-up, guidelines for multi-unit residential buildings but the availability of information for discrete building systems from a wide variety of sources, the project concluded that CMHC should initiate a subsequent project to compile the measures into a single Tune-Up Guide for Multi-Unit Residential buildings. The project is complete. A Research and Development Highlight detailing the findings of the literature search will be published by March 2007.

CMHC Project Officer : *Duncan Hill*
CIDN : 23590200
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

ENERGY EFFICIENCY CASE STUDIES OF MULTI-UNIT RESIDENTIAL BUILDINGS

CMHC is in the process of documenting the application of energy efficiency measures in both new and existing multi-unit residential buildings to be used as case studies. A compendium of case studies will be made available from CMHC. The case studies will also support the Energy Efficiency Opportunities Manual for Multi-Unit Residential Buildings that CMHC has developed. The case studies completed include: 1. Conservation Co-op, Ottawa; 2. Energy Efficiency Retrofit of the Broadview Apartment Building, Toronto; 3. Almon Street CBIP Building; and 4. Apartment Building Retrofit, Bay Street, Toronto. Ongoing projects include: 1. Performance of an Apartment Building equipped with a Water Loop Heat Pump System; 2. Grandin Green CBIP Building; and 3. Energy and Thermal Performance of an ICF Apartment Building. The case studies will be published as a part of the CMHC Better Building Series starting July 2005 and will be issued periodically as they are completed.

CMHC Project Officer : Duncan Hill
CIDN : 18990200
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

THE HOUSEHOLD ENVIRONMENTAL MONITORING PROJECT

This CMHC External Research Program (ERP) project examined the effectiveness of a community-based approach to encourage homeowners to save energy and greenhouse gases. The work took place in 20 houses in a central Ottawa neighbourhood. The NRCan Energuide for Houses program was used for house testing and to produce recommendations for house modifications. The community group encouraged participation in the process; followed the progress of changes to the houses and their heating systems; monitored the effectiveness of measures undertaken; and reviewed with homeowners their expectations and realizations about the process. Results were mixed. On the whole, the houses reduced their greenhouse gas production by 2 tonnes per family, but a large part of that average gain was the exceptional performance of a few select houses. The research dealt with homeowners' motivations as well as their attempts to cut energy use. Participants appreciated the guidance of the consultant but stated that they would respond better to regulation or financial incentives, rather than the largely voluntary programs now in place.

Prepared by Jane Thompson, Magda Goemans, Peter C. Goemans & Andrzej Wisniowski, Jane Thompson Architect. CMHC Project Officer: Don Fugler. Ottawa: Canada Mortgage and Housing Corporation, 2006. 2 volumes

Note: No. 06-104 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order no. 65035)

STATUS : New Completed Report and Research Highlight

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/HouseholdEnvVolume1(w).pdf (Volume 1 - 458 KB)
ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/HouseholdEnvVolume2(w)_June6.pdf (volume 2 - 1315 KB)

MANITOBA ENERGY RETROFIT PROJECT - 40% ENERGY SAVINGS

This is a large, multi-agency project with a goal to have substantial energy retrofits (e.g. 40% energy reductions) in a sample of 500 Manitoba houses. A subsample of these houses will have more innovative retrofits, where the savings and consumer acceptance are less certain. CMHC's contribution will be used to establish the range of appropriate retrofits, to specifically monitor the more innovative approaches, and to develop information packages on the measures that prove successful. The project has just started. The project consulting team produced a summary of suitable retrofit packages for the housing stock in question, and reviewed the report through a meeting of experts. Work is continuing in Winnipeg to finalize funding for the retrofit program and to select the test houses.

CMHC Project Officer : *Don Fugler*
CIDN : 33980200
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

MEASURING HOUSING SUSTAINABILITY - ANNEX 31 - ENERGY RELATED ENVIRONMENTAL IMPACT OF BUILDINGS

Annex 31 is a project established under the auspices of the International Energy Agency's (IEA) Agreement on Energy Conservation in Buildings and Community Systems, for which CMHC is the designated Operating Agent (project manager). The mandate for the Annex 31 project is to provide information on how tools and assessment methods might improve the energy-related impact of buildings on interior, local and global environments. The ultimate objective is to promote energy efficiency by increasing the use of appropriate tools by practitioners. Through collaborative research and communications by 14 participating countries, the goal of Annex 31 is to advance the capability and reduce the cost of estimating the energy related environmental effects of buildings, and to increase awareness of the importance of including such estimation in the design process. The end product for the project is a final Annex 31 report available on the project website (annex31.com). The project scope includes a description of tool theory and methods, a directory of tools, case studies, and research reports on how tools perform. The Annex 31 report may be of interest to users of tools, to groups engaged in tool design, and to anyone establishing policy and guidelines for promoting better decision-making within the building sector.

CMHC Project Officer : *Thomas Green*
Division : Policy and Research Division
AVAILABILITY : Product is available on the web
CIDN : 16290300
STATUS : Ongoing

PERFORMANCE EVALUATION OF THE ALMON STREET MULTI-UNIT RESIDENTIAL BUILDING

This report documents the performance of a multi-unit residential building, located in Halifax, Nova Scotia, that was designed and constructed to meet the requirements of Natural Resources Canada's (NRCan) Commercial Building Incentive Program (CBIP). One of the primary objectives of CBIP is to reduce the energy consumption of buildings to a level that is 25 % below what the buildings would consume if constructed to the model National Energy Code for Buildings. Canada Mortgage and Housing Corporation commissioned a study to evaluate the extent to which the building met the CBIP energy requirements and to characterize the building's water consumption, indoor air quality and ventilation system performance. The results of the study are to be used to provide the building's owner with feedback on the performance of his building and where opportunities exist for improvements.

Prepared by David C. Stewart & Associates Inc. CMHC Project Officer: Duncan Hill. Ottawa: Canada Mortgage and Housing Corporation, 2005. 39 pages (4372 KB)

Note: No. 06-100 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order no. 64958)

STATUS : Completed Report and Research Highlight
AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Almon%20FinalReport_web_feb13.pdf

REGULATORY AND ORGANIZATIONAL REQUIREMENTS FOR PRIVATE DISTRICT ENERGY SYSTEMS

A research project is underway to assess the regulatory and organizational requirements of non-public utilities that provide service to multi-unit residential buildings. The project will identify issues regarding utility ownership and operation that must be addressed, governing regulations, and potential ownership-client arrangements. The project will provide guidance to private firms, housing providers, developers and condominium corporations that may be considering the generation of heat and power for sale to individual apartments or entire buildings within a community. This project is a part of a larger program of work being conducted in cooperation with Natural Resources Canada to assess the opportunities for ground source heat pumps in district energy systems. Ownership and regulatory issues represent a challenge to those other than established public utilities who would like to provide energy services, from ground sources, renewables as well as conventional technologies, to individual or clusters of multi-unit residential buildings. The project will be completed by December 2006.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 32960200
STATUS : Ongoing

ENERGY CONSERVATION

STRATEGIES FOR ALTERNATIVE ENERGY USE AND REDISTRIBUTION AT THE BUILDING ENVELOPE

As part of a three year Panal on Energy Research and Development (PERD) initiative, integrated consultant teams explored the potential strategies to reduce, generate or recover and redistribute energy at the building envelope of multi-unit residential buildings for Prairie, Vancouver, Toronto and Halifax locations. The teams include expertise in building management, and development, as well as architectural, engineering and energy simulation. Each team developed recommendations for the strategies most feasible in their study areas. In Montreal a charrette led by NRCan explored sustainable strategies for a mixed-use project which includes retrofit and new commercial and residential development. The findings of the Prairie team have been used to develop strategies for a housing development in Regina. A commentary of the strategies, representing analysis of building envelope-related energy strategies for Halifax, Toronto, Calgary, and Vancouver has been written and is available.

CMHC Project Officer : *Sandra Marshall* ***CIDN*** : 08400306
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Research highlight is not yet available

SUPPORT FOR IEA ANNEX 39: HIGH PERFORMANCE THERMAL INSULATION SYSTEMS

The International Energy Agency (IEA) has launched an R&D program to research high performance thermal insulation systems for buildings. The project will focus on vacuum insulation panels that can achieve, in theory, an insulating value of R75 per inch. Vacuum panels represent an order of magnitude improvement over conventional insulating materials, thus the energy saving potential for both new and existing buildings is enormous. Plans are being developed to organize and run a demonstration project using vacuum panels in order to assess their application and performance in buildings. CMHC will be supporting Canada's contribution to the IEA project, led by NRC's Institute for Research in Construction, and will be able to disseminate the results to the housing industry. Canada has also been asked to participate in the development of an international standard for vacuum insulating panels as a part of the IEA effort. The project is currently underway and will be completed by December 2006.

CMHC Project Officer : *Duncan Hill* ***CIDN*** : 30450200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

See also: DEVELOPMENT OF AN ENERGY MANAGEMENT PILOT PROGRAM FOR SOCIAL HOUSING IN ONTARIO, p. 52

FIRES & FIRE PREVENTION

EVALUATION OF COMPRESSED AIR FOAM SPRINKLERS

Automatic fire sprinklers that use large quantities of water to suppress fires are often unsuitable in remote and northern communities, when the water supply is scarce. The project will modify existing compressed air foam (CAF) sprinkler technology developed by NRC for institutional and commercial use, for single- and multi-family housing. Under the direction of Dr. Andrew Kim at NRC, the project will demonstrate compressed air/foam sprinklers which require a fraction of the amount of water used by conventional sprinklers, in a residential application suitable for use in northern and remote communities. A prototype will be tested in a controlled fire in a vacant house. The project will be complete by the spring of 2007.

CMHC Project Officer : *Barry Craig* ***CIDN*** : 24680201
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

FIRE PREVENTION MANUAL AND VIDEO: A HOUSING MANAGER'S GUIDE

The objectives of this research are to identify the types of fire-related problems encountered in Aboriginal communities and their impacts on housing, to determine and document possible solutions to alleviate the problems and impacts, and to produce a user-friendly, plain language manual that will assist housing managers and a film on fire prevention and safety targeted to community members.

CMHC Project Officer : *Marcelle M Gareau* ***CIDN*** : 31830200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

SPECIAL INTEREST GROUP ON FIRE PERFORMANCE OF HOUSES

In recent years, Canadian fire death statistics have followed a downward trend. As technological advances introduce new construction practices, building designs and materials into new house construction, the fire protection community needs evidence that safety isn't compromised. The Canadian Commission on Building and Fire Codes (CCBFC) and the Canadian Commission on Construction Materials Evaluation (CCCME) have requested information regarding the potential impact of such changes on the fire safety of low-rise housing. In response, NRC's Institute for Research in Construction (IRC), in partnership with CMHC, government, industry, and codes and standards agencies, has begun a project to research fires in single-family dwellings and the factors affecting fire safety. The primary objective of this research is to determine the impact of innovative residential construction products and systems on fire safety. The project should be complete in 2007.

CMHC Project Officer : *Barry Craig* ***CIDN*** : 33100200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

GREEN ROOFS

BCIT GREEN ROOF RESEARCH PROGRAM, PHASE 1 SUMMARY OF DATA ANALYSIS: OBSERVATION PERIOD - JAN. 1, 2005 TO DEC. 31, 2005

To address a lack of climate-specific performance data and demonstrated feasibility of green roof systems within its region, the British Columbia Institute of Technology (BCIT) constructed and commissioned a dedicated field test site, the Green Roof Research Facility (GRRF), in 2003. The main research objective was to investigate the performance and practical application of extensive green roof systems in Canada's west coast climate.

The GRRF features three roof sections separated by parapets – two green roof sections and one non-green section for reference (REF). Both green roof systems include a root barrier, non-reservoir drainage board and independent filter cloth, and the same growing medium composition. Green Roof 1 (GR-1) contained 75 mm of growing medium planted with sedum species while Green Roof 2 (GR-2) contained 150 mm of growing medium planted with a mix of fescues and grasses. The roof sections were fully instrumented to measure stormwater runoff characteristics and energy efficiency. The roof was monitored and performance data were collected for one full year (January 1 to December 31, 2005). The plants were fully established during this period.

Jointly funded by the British Columbia Institute of Technology (BCIT), the National Research Council, the Greater Vancouver Regional District, and CMHC's External Research Program, this research report evaluates the performance of the green roofs in the testing facility built at BCIT. It gathered and analyzed data with respect to delaying storm water run-off and reducing run-off volume, as well as the cooling and insulating abilities of the roof system.

The first year of observation showed that, within the temperate climate of Vancouver, a green roof system with appropriate plant species in 75 mm of growing medium can provide a similar level of stormwater mitigation and thermal benefits as a green roof system with 150 mm of growing medium. The preliminary findings suggested that buildings in Vancouver could benefit from lighter weight extensive green roof systems.

Prepared by Maureen Connelly, Research Program Head, Centre for the Advancement of Green Roof Technology, British Columbia Institute of Technology. Contributors: Maureen Connelly, Karen Liu, and John Schaub. CMHC Project Officer: Sandra Marshall. Ottawa: Canada Mortgage and Housing Corporation, 2006. (External Research Program Report) 59 pages (1863 KB)

STATUS : New Completed Report

AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/bcit(w).pdf

REGIONAL BENEFITS OF GREEN ROOFS

CMHC is contributing to several research studies and demonstrations of green roofs by assessing the benefits derived from this practice in various climate regions of Canada. Studies include those of Vivre en ville in Quebec, NRC's Green Roof Consortium and a CMHC External Research project by the British Columbia Institute of Technology. Each study will report on the construction methodology and specifications of the green roof as well as monitored results. The goal of CMHC's work is to show the requirements, costs and benefits of residential green roof systems in Canada taking into account the type of installation, local climate, energy and regulatory regimes. Research Highlights of the BCIT and Vivre en ville work are expected to be completed by late 2006.

CMHC Project Officer : *Sandra Marshall* ***CIDN*** : 30430200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Research highlight is not yet available

RESOURCE MANUAL FOR MUNICIPAL POLICY MAKERS IN SUPPORT OF GREEN ROOF INFRASTRUCTURE IMPLEMENTATION

This research is a comprehensive planning document that allows municipal policy makers to evaluate the benefits of green roof infrastructure in their communities and to design appropriate policies and programs in support of their implementation. The resource manual will provide practical information for use by municipal government officials. The publication contains materials that can be used for presentations to municipal officials during the ongoing workshops on green roof infrastructure training and development. It will also serve as a follow-up publication to "Greenbacks from Green Roofs", an earlier published CMHC research initiative. The document will be available in late 2006.

Note: No. 06-113 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order no. 65187)

CMHC Project Officer : *Sandra Marshall* ***CIDN*** : 31730200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Research Highlight is available

CAN/CSA F326-M91 (R1998), RESIDENTIAL MECHANICAL VENTILATION SYSTEMS

CMHC has been supporting the revision of CAN/CSA F326-M91 (1998), Residential Mechanical Ventilation Systems, with a financial contribution for the Canadian Standards Association (CSA) to act as secretariat, through separate contracts to consultants researching various aspects of the standard, and through CMHC participation in the task group work of the Committee. Proposed changes to the standard have evoked strong opposition from some sectors. A two year moratorium on standard development has been imposed by the Committee while some technical issues are explored.

CMHC Project Officer : *Don Fugler*	***CIDN*** : 20620200
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

CHARACTERIZATION OF AIR LEAKAGE, PRESSURE REGIMES AND RESULTANT AIR MOVEMENT IN HIGH-RISE RESIDENTIAL BUILDINGS

The objective of this project was to undertake a field investigation of the ventilation and infiltration in a residential high-rise building. CMHC, in cooperation with the Institute for Research in Construction, monitored indoor-outdoor air pressure regimes in a high-rise for a period of one year. Ventilation system performance was also assessed. Pressure regime measurements, in conjunction with measured air leakage characteristics of selected assemblies, are used to estimate real-time air movement across the building envelope. This information will add to the body of knowledge governing infiltration-ventilation regimes and resultant heat load calculations in buildings. A report and research highlight documenting the results of the project will be available by March 2007.

CMHC Project Officer : *Duncan Hill*	***CIDN*** : 19340200
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

CHARACTERIZE THE PERFORMANCE OF A WATER LOOP HEAT PUMP SYSTEM IN A MULTI-UNIT RESIDENTIAL BUILDING

Two-pipe water loop heat pump systems represent an innovative approach to heating and cooling multi-unit residential buildings. The system consists of a central water distribution system that distributes moderately warm water to each apartment in the winter and cool water in the summer. An in-suite heat pump fan coil unit is then used to heat or cool the apartment depending on the season using the central water loop as a heat source or a heat dump. In theory, the system will allow for simultaneous heating and cooling of different areas of the building by redistributing heat to where it is needed. This ability is thought to offer significant energy savings but the extent to which this may be the case has not been evaluated. CMHC is undertaking a project to characterize the performance of a water loop heat pump system in a multi-unit residential building in Ottawa so that the potential for energy savings can be assessed. The project will evaluate energy consumption, and operational and maintenance issues over a one-year period. The project will be completed in March 2007.

CMHC Project Officer : *Duncan Hill*	***CIDN*** : 18990200
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

ESTABLISHING PERIODS OF LOW NATURAL VENTILATION

This research project will use historical data collected in Ottawa by NRC to roughly establish those periods of low natural ventilation - when stack and wind pressures are so low that natural ventilation does not occur. There are generally two types of ventilation in houses: natural infiltration (and exfiltration) produced by stack and wind pressures, and mechanical ventilation by exhaust or intake fans operating across the house envelope. Natural infiltration is variable. There are periods during the year when outside temperatures are moderate and windspeeds so low that there is little or no natural ventilation produced. The mechanical ventilation systems are particularly essential during these periods. NRC will then use modelling and weather data to extend the analysis to other locations in Canada. The work will be completed in early 2007.

CMHC Project Officer : *Don Fugler*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 32140200
STATUS : Ongoing

EVALUATION OF AIR LEAKAGE CONTROL MEASURES TO COMPARTMENTALIZE NEWLY CONSTRUCTED SUITES IN A HIGH-RISE RESIDENTIAL BUILDING: FINAL REPORT

Field testing was undertaken to determine the extent to which apartments in a newly constructed residential high-rise building could be compartmented from one another and adjacent common areas. Compartmenting is a relatively new concept that provides well-sealed interior partitions that prevent uncontrolled air movement between apartments as well as into, through and out of buildings. Design details were reviewed and changes implemented in two test apartments during construction to make the internal partitions as airtight as possible. Testing was conducted to determine the level of airtightness achieved and this was compared to the test results of other similar apartments in the building. The research concluded that while apartments could be made more airtight, the implementation of air leakage control still represents a challenge to designers and contractors.

Prepared by Buchan, Lawton, Parent Ltd. CMHC Project Officer: Duncan Hill. Ottawa: Canada Mortgage and Housing Corporation, 2006. 61 pages (1866 KB)

Note: No. 06-102 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order number 65002)

STATUS : Completed Report and Research Highlight
AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Evaluationofairleakage.pdf

EXPLORING SOLUTIONS TO MAKE-UP AIR ISSUES IN MULTI-UNIT RESIDENTIAL BUILDINGS

This project will explore make-up air issues for individual apartments in multi-unit residential buildings. The provision of make-up air to balance in-suite exhaust-only appliances is thought to be required to ensure the proper operation of exhaust fans and combustion venting systems serving gas-fired furnace, hot water tanks and fireplaces. However, most of the code requirements governing make-up air have been written for single family houses and institutional, commercial and industrial buildings. Multi-unit residential buildings do not fit into either category thus the extent to which make-up air is actually required has not been fully explored. The project will measure the depressurization of apartments due to the operation of unbalanced in-suite exhaust fans in order to assess the risk to combustion venting systems, the building envelope and the performance of other exhaust appliances. Methods to reduce the risks of depressurization by limiting overall exhaust capacity, interlinking exhaust equipment to prevent simultaneous operation, and introducing make-up air into individual apartments will be explored. Additionally, the indoor-outdoor operating environment under which make-up air systems must operate will be estimated. The results from testing the impact of exhaust appliances on the pressure regimes in apartments indicate that apartments are relatively airtight and the simultaneously operation of in-suite exhaust can significantly depressurize apartments. This could be a problem if spillage susceptible combustion appliances were to be installed in the units. A report (Assessment of Suite Compartmentalization and Depressurization in New High-rise Residential Buildings) has been published and a research highlight is available on-line at www.cmhc.ca. The overall project area will be completed by March 2007.

CMHC Project Officer : *Duncan Hill*	***CIDN*** : 33030200
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

EXPLORING VENTILATION SYSTEMS FOR MURBS IN MARITIME CLIMATES

CMHC, in cooperation with the Homeowner's Protection Office of British Columbia, will conduct a research project to study two key ventilation issues affecting multi-unit residential buildings in the moderate coastal regions of Canada. Specifically, the project will evaluate the extent to which moisture laden outdoor air can be used to control indoor moisture loads without mechanical air conditioning or dehumidification. The project will also assess the ability of simple semi passive ventilation systems to exchange, condition, distribute and circulate air within individual apartments. Semi-passive ventilation systems offer many advantages to conventional MURB ventilation but the extent to which they can meet ventilation needs under varying indoor outdoor conditions and occupant lifestyles must be explored. The projects will be undertaken concurrently and will be used to produce guidelines for ventilation systems in multi-unit residential buildings in mild coastal climates. The projects will be completed by March 2007.

CMHC Project Officer : *Duncan Hill*	***CIDN*** : 33170200
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

FIELD SURVEY ON THE PERFORMANCE OF HOME ELECTRONIC FILTERS: DEVELOPMENT OF CLEANING FREQUENCY RECOMMENDATIONS AND A TEST

Electrostatic precipitator (or "electronic") filters for residential heating systems have been shown to be the most efficient filters for most home particulate applications. However, they have two problems. They create small but measurable amounts of ozone during operation and their performance degrades over time. This project looked at the performance of these filters in occupied houses. It investigated how quickly they lose their efficiency following cleaning. The field work for this project revealed that the filters sampled were usually operating far below their predicted performance. Cleaning and adjusting did not lead to consistent performance improvements. The contractor is discussing with CMHC and his partners how to complete the project, given these unexpected findings. The project will be completed by March 2007.

CMHC Project Officer : *Don Fugler* — ***CIDN*** : 28920208
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

IMPROVING DEPRESSURIZATION LIMITS OF OIL-FIRED APPLIANCES

CMHC, in conjunction with Natural Resources Canada and a major manufacturer of oil heating products, is looking at improving the spillage resistance of oil-fired appliances. The research tested the depressurization resistance of several existing oil furnaces and water heaters, using a modified test protocol from recent work on gas appliances, and identified technologies that allow oil-fired appliances to operate safely in new houses with higher levels of depressurization. The project will be completed in the fall of 2006.

CMHC Project Officer : *Don Fugler* — ***CIDN*** : 33990200
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

TESTING THE PERFORMANCE OF VALVED SOFFIT VENTS IN DEPRESSURIZING ROOF SPACES DURING WINDSTORMS

High winds can damage attic spaces in two ways: by inducing rain or snow into the space or by lifting off the roof framing and sheathing. This research investigates whether a proprietary soffit opening, which closes under high wind loads, will result in reduced attic pressures. The device will be field tested for several months in a test house located in a windy area.

CMHC Project Officer : *Don Fugler* — ***CIDN*** : 34310200
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available — ***NEW***

TUNE-UP GUIDE FOR MULTI-UNIT RESIDENTIAL BUILDINGS

A guide has been developed that compiles existing information on how on-site staff and contractors can improve, or fine tune, the performance of multi-unit residential buildings. Similar guidelines exist for commercial buildings but are referred to as re-commissioning guidelines. The guide will provide low cost and no cost methods to improve the performance of building envelope, space and domestic hot water heating, ventilation, health and safety, and electrical systems and appliances in multi-unit residential buildings. While the energy savings accrued are expected to be modest, use of the guide will ensure that buildings operate efficiently and performance problems are resolved before they become larger concerns. The Tune-Up guidelines will also allow a property owner or manager to establish optimal system conditions so that the impact of repairs, renovations, or energy and water efficiency improvements can be realistically evaluated. The Guide was completed in March 2003. A Research Highlight describing the Tune-Up Guidelines is underway. CMHC field testing of the Guidelines in Toronto and Saskatoon began in September 2003 but delays in implementation in both cities will lengthen the post implementation periods to March 2006 for Saskatoon and possibly December 2006 for the Toronto projects.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 23590200
STATUS : Ongoing

HIGH-RISE AND MULTIPLE UNIT CONSTRUCTION

BEST PRACTICE GUIDES UPDATE

This project will revise, one at a time, the five existing Best Practice Guides, starting with Brick Veneer Steel Stud published in 1996. New research and user feedback from seminars based on the guides and from CMHC's web site indicate that some text and details need updating. Partnerships will be developed with interested parties for input, review and promotion. A national competition will be held to select a consultant for each guide who will be responsible for coordinating and producing the revision work. Each consultant will work with an advisory committee, specific to each guide, who will participate in drafting the new edition. The advisory committee will include practitioners, industry representatives, manufacturers and regulators. The work will include a thorough study of the existing Guide, an analysis of users' feedback, and roundtable critique sessions. Public sessions will be held to discuss the proposed revisions. The consultant will then collect the information, produce the revised manuscript and obtain consensus from the advisory committee. The revised Brick Veneer Steel Stud guide is currently being reviewed by the advisory committee, and should be complete in 2007.

CMHC Project Officer : *Barry Craig*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 23780200
STATUS : Ongoing

BETTER BUILDINGS - RETROFIT CASE STUDIES

This project documents and illustrates repairs and upgrades to multi-unit residential buildings across Canada. It is estimated that, in this country, $300 M are spent every year in premature building failures. CMHC is collecting and publishing easy to read case studies to present to owners, architects, builders and property managers on what can go wrong and why, how to fix it and how much it will cost. Most cases will focus on the building envelope since the vast majority of documented problems occur there, in addition to examples of energy and acoustical upgrades. This project adds to CMHC's current documentation and publication of case studies on repair and retrofit of multiple-unit residential buildings. Ultimately, a repair guide will be developed based on this work. Case studies from across Canada are obtained from those directly involved in the repairs and involve buildings of all types of construction ranging in height from 3 to 50 storeys. Every year the Corporation publishes 10 Better Buildings Case Studies on CMHC's website: http://www.cmhc.ca/en/inpr/bude/himu/bebu/index.cfm. Since the project began, in 1999, 57 case studies have been published.

CMHC Project Officer : *Duncan Hill* — ***CIDN*** : 33960200
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : See above

BUILDING ENVELOPE TEST HUT FACILITY PHASE 2 FEASIBILITY STUDY

CMHC, in partnership with the Homeowner Protection Office and Forintek Canada Corporation, provided the British Columbia Institute of Technology (BCIT) with a financial contribution to undertake and complete a study to assess and evaluate the feasibility of building, operating and maintaining a Building Envelope Test facility in which the response of wall assemblies to 'real-time' weather load, as experienced in the coastal climate of British Columbia, can be investigated and evaluated. The project is expected to be completed by the spring of 2007.

CMHC Project Officer : *Silvio Plescia* — ***CIDN*** : 23840200
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

CHARACTERIZATION OF THE STOCK OF CONDOMINIUM BUILDINGS IN CANADA

The number and characteristics of condominiums in Canada are unknown. This project reviewed Statistics Canada data files to estimate the number of condominiums in Canada, their location, age, number of storeys and number of suites based on the number of building permits issued since 1970. Using STATSCAN data, it was concluded that approximately 6,000 condominium buildings exist in Canada. Based on discussions with the Canadian Condominium Institute and other agencies, this estimate likely understates the number of buildings. The review also found that buildings could not be classified by the number of storeys nor number of units using STATSCAN data. Based on the outcome of this project, CMHC initiated another project with the University of Ottawa to review the data available on condominiums within municipal files. The project revealed that the data exists within the local land registry office but was difficult to extract given the state of the individual files. Nevertheless, the University of Ottawa was able to characterize the population of condominiums in the greater Ottawa area in terms of number of buildings, number of units, number of storeys and age. A report and Research Highlight documenting the project findings are available: Characterizing the Condominium Population of the Greater Ottawa Area, 1969 - 2002. CMHC repeated the project in Halifax, Nova Scotia, to determine whether or not similar opportunities to characterize the stock of condominiums exist elsewhere. This project has been completed and the report will be available late in 2006.

CMHC Project Officer : *Duncan Hill* — ***CIDN*** : 2277 0200001-2
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

DETAILS FOR SUSTAINABILITY IN PRECAST CONCRETE

Sustainability has become essential in building design. Architects need an impartial and accurate document to design sustainable cladding using precast elements. In 2001, CMHC published a Best Practice Guide for architectural precast panels. This work will complement the Guide by providing guidance on architectural sustainability solutions for the system. This document, alone and as part of the Best Practice Guides, will illustrate typical junctions with particular attention to air barrier and thermal continuity, water management and avoiding condensation by diffusion. A consultant will develop a sustainability rationale applied to precast buildings. Construction details showing alternative, greener, materials and practices will be drawn to give architects and owners choices and as the basis for informed solutions. Cost will be a component of the selection criteria in order to maintain competition. A steering committee, which includes major industry stakeholders, has been convened to advise and oversee the consultant's work. Before publication, text and details will be shown at industry events and building envelope councils, in order to achieve the greatest exposure and acceptance as well as receive constructive input. It is expected that the manuscript will be completed by May 2007 and the new Guide will be published in January 2008.

CMHC Project Officer : *Duncan Hill* **CIDN** : 33120200
Division : Policy and Research Division **STATUS** : Ongoing
AVAILABILITY : Product is not yet available

ENGINEERED BUILDING ENVELOPE SYSTEMS FOR OUTDOOR/INDOOR CLIMATE EXTREMES

CMHC is contributing to a National Research Council project to identify indoor conditions and weather in northern and northern-coastal communities, and select appropriate building envelope assemblies for extreme climates. The project will assess the hygrothermal performance of these assemblies by computational and laboratory testing, measure air leakage by means of blower door tests and produce performance parameters for heating and high humidity climates. The project will also analyze the energy and environmental impact of proposed building envelope assemblies. The research findings will be published in a research report, and presented in seminars throughout Canada and the North. The project began in the winter of 2004 and a final report will be produced by the spring of 2008.

CMHC Project Officer : *Barry Craig* **CIDN** : 29600200
Division : Policy and Research Division **STATUS** : Ongoing
AVAILABILITY : Product is not yet available

EVALUATION OF BUILDING CONDITION ASSESSMENT REPORTS FOR CONDOMINIUMS

This project will review building condition assessment reports of twenty-five high-rise (over eight storeys) residential buildings to illustrate general trends and formats in use. A building condition assessment is a review and comment on the present and anticipated condition and performance of a building's components. Various elements of the property can be included in the review (architectural, mechanical, electrical, civil, elevating devices, building envelopes, underground parking structures, recreational facilities and other specialty construction). Property managers report that the quality of the condition reports varies widely and there is no consensus on methodology for the assessment, cost allowances and sources of information on replacement costs and service life of many building elements. This creates financial problems when major items in a building have to be replaced and insufficient or no allowance was made to cover the expense. A sample of the reports will be analyzed in detail to ascertain the validity of the predictions, cost estimates, errors and omissions. A standard building condition assessment form will be developed and tested. Five firms will conduct a condition assessment on the same building using the proposed new form which will then be reviewed by interested stakeholders. Owners, managers, prospective owners and firms conducting audits will benefit from this analysis.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 32260200
STATUS : Ongoing

FIELD REVIEW OF INSULATION RETROFITS OF SOLID MASONRY STRUCTURES

This project will investigate the condition of solid masonry wall assemblies that have been retrofitted with interior insulation to reduce energy use and enhance occupant comfort. Site investigations will visually assess the condition of masonry structures and adjacent insulation and framing layers on the exterior and interior of the wall assemblies. This information is required as there is a general perception in the housing industry that the application of interior insulation to solid masonry wall assemblies will cause the walls to deteriorate due to changes in the heat, air and moisture regimes to which the walls are exposed. This work will result in a compilation of case studies of solid masonry insulation retrofit projects and the development of guidelines for assessing and insulating solid masonry buildings. Case studies will be published as Better Building Case Studies and the knowledge gained through the case studies will be documented in a research publication by March 2007.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 30840200
STATUS : Ongoing

FIRST UPDATE: BEST PRACTICE GUIDE: BRICK VENEER CONCRETE MASONRY UNIT BACKING

The Best Practice Guide: Brick Veneer Concrete Masonry Unit Backing (BVCMU) will be revised and updated to comply with or exceed requirements in the new 2005 Model National Code and current standards and test criteria that govern masonry construction in Canada. The drawings will be refreshed to enhance their readability and modified where needed to conform to current codes and practices. The work should be complete in December 2007.

CMHC Project Officer : *Barry Craig*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 33860200
STATUS : Ongoing

GUIDELINES FOR THE RETROFIT OF UNINSULATED MASONRY WALLS

Investigations of previously retrofitted solid masonry walls have been performed to determine the impact that the interior application of insulation has on the durability of the walls. The findings of the investigations will be published as case studies. Case studies will include a 120 year old solid masonry building in Montreal that was insulated 15 years ago by the application of spray applied polyurethane insulation on the interior of the walls, a 50 year old solid masonry office building in Ottawa that was insulated on the interior 8 years ago and several 1800's vintage houses and apartment buildings. Preliminary indications are that the interior application of insulation has not adversely affected the durability of the masonry walls of the case study buildings but further investigation will be required to confirm that this conclusion generally holds true for other buildings. The case study reports will be available by December 2006.

CMHC Project Officer : *Duncan Hill* ***CIDN*** : N/A
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

HIGH PERFORMANCE THERMAL INSULATION SYSTEMS IN BUILDING APPLICATIONS

CMHC will contribute funding to the Institute for Research in Construction (IRC) in support of its efforts to develop a high performance thermal insulation system and its contributions to a related International Energy Agency Annex in High Performance Insulating Systems. IRC will develop new nano-porous materials for use in vacuum insulation panels and the facility required to test and evaluate the insulation system. Based on the development of the material and the testing, IRC will produce a report on the high performance thermal insulation system it develops and the potential applications and guidelines for use. This project will serve as CMHC's contribution to the building of research capacity at the Institute for Research in Construction in the field of high performance thermal insulation systems. Potential applications within building envelope systems will be conceptualized in order to generate awareness of how this futuristic form of insulation may be eventually applied. The project will be completed by March 2008.

CMHC Project Officer : *Duncan Hill* ***CIDN*** : 33630200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

IN-SITU MONITORING OF WOOD-FRAMED EXTERIOR WALL ASSEMBLIES - COQUITLAM, BC

Wood framed buildings in the Vancouver area have experienced excessive moisture damage to the sheathing boards and wood framing over the past decade. This applied research project, funded by Canada Mortgage and Housing Corporation in partnership with Polygon Homes Ltd., involved the development of a building envelope diagnostic tool, specifically, an in-situ monitoring method to diagnose causes of moisture problems in low-rise wood-framed construction. This method is important to residential building owners as it can be used to develop cost effective remedial repair recommendations and to promote better design and construction guidelines for new buildings. This project's objective was to monitor the performance of the exterior wall assemblies of two, 46 unit four-storey buildings in Coquitlam, BC. Monitoring was carried out for one full year, capturing the wall response to the range of climate loading conditions. Exterior walls, including interior living spaces as well as interstitial wall areas, were monitored for temperature, relative humidity, wood moisture content and air pressure differentials. A weather station, mounted on the roof of one building captured the local weather conditions: air temperature and relative humidity, wind speed and direction and rainfall. Monitoring of the buildings started in January 2001. Data collection continued until the spring 2002. A report and Research Highlight will be available by fall of 2006.

CMHC Project Officer : *Silvio Plescia* ***CIDN*** : 22540200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

IN-SITU MONITORING OF WOOD-FRAMED EXTERIOR WALL SYSTEMS - VANCOUVER, BC

Wood framed buildings in the lower mainland of British Columbia have experienced excessive moisture damage to both sheathings and framing materials. In recent years, with the adoption of Best Practice principles throughout the construction industry (by builders and developers, design professionals and various construction trades) coupled with regulatory amendments to the City of Vancouver building by-laws, a new generation of exterior wall assemblies incorporating a 'rainscreen' moisture management strategy has been constructed. How effective were these walls at managing the exterior moisture loads? The objective of this applied research project, funded by Canada Mortgage and Housing Corporation, is to monitor, assess and document the performance of a residential low-rise four storey, wood-framed building which incorporates rainscreen design technology, and to analyze data to determine the effectiveness of wood frame rainscreen wall assemblies at managing exterior moisture loads. Monitoring of interior, exterior and interstitial wall areas will include temperature, relative humidity, wood moisture content and air pressure differentials. A weather station mounted on the roof of the building will capture the local weather conditions: air temperature and relative humidity, wind speed and direction and rainfall. Monitoring will be carried out for one full year, capturing the wall response to the range of climate loading conditions. Field work is complete and a Research Highlight will be published by fall of 2006.

CMHC Project Officer : *Silvio Plescia* — ***CIDN*** : 22540200
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

INNOVATIVE BUILDING CASE STUDIES

Innovative building case studies document new projects of particular interest to architects and other building professionals. They showcase built projects which use new technologies, sustainable features and innovative planning attributes, among other notable features. As they are completed the studies are showcased on the CMHC website at http://www.cmhc.ca/en/inpr/bude/himu/inbu/index.cfm. New products for 2006 include case studies of construction waste diversion and the Southfield solar house in Ontario, natural resources conservation in a multi-unit residential building, as well as the Factor 9 house in Saskatchewan.

CMHC Project Officer : *Sandra Marshall* — ***CIDN*** : 08400306
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is available on the web

INNOVATIVE BUILDINGS AND CONTINUING EDUCATION ARTICLES FOR ARCHITECTS

CMHC develops and publishes continuing education articles and case studies of innovative buildings for architects. These publications provide technical information on a variety of subjects, especially those related to building envelope issues. The Innovative Building Case studies provide examples of innovative systems or processes, which can help improve industry knowledge. New web-based learning articles requested by the architects' associations and the documentation of additional Innovative Building case studies are ongoing or planned in 2006. In 2006 new articles include Design, Selection and Commissioning of Window Installations, Integrated Design Process, and Housing Provider Needs.

CMHC Project Officer : *Sandra Marshall* — ***CIDN*** : 3366-PLN05
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is available on the web at http://www.cmhc.ca/en/inpr/bude/himu/coedar/index.cfm

LOAD PROFILES IN MULTI-UNIT RESIDENTIAL BUILDINGS: PILOT STUDY ON LOAD PROFILING IN METRO TORONTO HOUSING

This project will describe load profiling work underway in Metro Toronto Housing Corporation multi-unit residential buildings. The project will characterize thermal, electrical power and water requirements in the apartment buildings and will also identify technical issues encountered in load monitoring and data interpretation. This project is being used as a pilot project to identify the factors that will have to be considered in a larger project being planned by CMHC and Natural Resources Canada to assess the energy and water load profiles in low and high-rise housing. The results of the study will be published as a CMHC Research Highlight by March 2007.

CMHC Project Officer : *Duncan Hill* — ***CIDN*** : 22010200
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

MODELING OF AIR/MOISTURE MOVEMENT AND DURABILITY PERFORMANCE OF RESIDENTIAL AND COMMERCIAL BUILDINGS

The purpose of this project is to develop knowledge to assess the impact of various wall design and indoor-outdoor environmental conditions on the durability and energy efficiency of new and retrofitted high-rise residential and commercial building systems. The hygIRC heat, air and moisture model developed by the Institute for Research in Construction is being used to model common wall systems. Retrofits to improve the airtightness and insulation levels in the walls were developed and are being applied to the basic wall systems. The hygIRC model will simulate heat, air and moisture conditions within the retrofitted walls to determine how the retrofits affect the durability of the wall system. This information will be used as a means to confirm the integrity of several specific retrofit measures developed for high-rise wall structures. The final project report will be available by December 2006.

CMHC Project Officer : *Duncan Hill* — ***CIDN*** : N/A
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

PARTICIPATION AND SUPPORT OF THE 3RD INTERNATIONAL BUILDING PHYSICS/SCIENCE CONFERENCE

The 3rd International Building Physics/Science Conference of the International Association of Building Physics (IABP), was held at Concordia University in Montreal from August 27th to 31st, 2006. CMHC supported this event as its main focus relates to housing construction. The primary objective of the third conference of the IABP was to bring together researchers and interested practitioners, who are active in building physics/science or in related fields such as building design, building services, environmental engineering and technology development and to advance the role of building physics/science in building engineering applications. The conference focused on the advances in research during the last decade and on the interactions between the various subjects covered in building physics/science through a well conceived performance approach. About 300 researchers from around the world were expected to attend.

CMHC Project Officer : *Duncan Hill* — ***CIDN*** : 34000200
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

PERFORMANCE AND MAINTENANCE PRIORITIZATION OF BUILDING FAÇADES

Public Works Government Services Canada, National Research Council of Canada and the Canada Mortgage and Housing Corporation are funding this project whose objective is to develop a risk-based framework for the evaluation of façade performance and prioritization of required maintenance for high and medium-rise buildings with consideration of the likely environmental loads. Evaluation of climatic effects in combination with wall response provides a basis for setting maintenance priorities. The process will be used to establish the risks associated with the deterioration amongst the various walls for any given building façade, between the level of risk among different buildings in a given climate or for comparing the relative effects of similar façades located in different climate zones. This project commenced in the spring of 2005 and is expected to be completed by the spring of 2008.

CMHC Project Officer : *Silvio Plescia* ***CIDN*** : 33150200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

PILOT 4-D GRAPHIC TOOL FOR POST-SECONDARY BUILDING DESIGN PROGRAMS

Through this project, an existing high-rise graphic package (as developed for limited use in earlier CMHC Research) will be enhanced to serve as a tool to assist in educating students and practitioners as to the interrelationship of various components (structure, fire suppression systems, cladding, photovoltaics, etc.) on high-rise buildings. The project is intended to determine the market for this type of educational tool within community colleges. To date, the survey tool has been designed and a preliminary list of potential respondents across Canada developed. The project is now expected to be completed by December 2006. This project is undertaken in partnership with Seneca College.

CMHC Project Officer : *Mark Salerno* ***CIDN*** : 32250200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

PREDICTING TIME TO FOGGING OF INSULATING GLASS UNITS

Predicting the inevitable repair or replacement of insulating glass (IG) units is a big challenge for building managers. It requires an understanding of potential service life span and the regular collection of field observations of actual performance. IG unit performance and the financial planning necessary for eventual replacement are of prime importance to condominium corporations.

Gerald R. Genge Building Consultants Inc. through CMHC's External Research Program conducted a research project to investigate methods for predicting the time to failure of insulating glass units and to suggest ways of improving the prediction of failure of insulated glass units.

The intent of this research was to document common modes of failure of insulating glass units and suggest methods to help building managers predict these failures and develop replacement plans. The work elements included the following:

- Undertake a literature search to document performance and failure modes of IG units;
- Assess existing IG unit failure prediction methods;
- Suggest and test new prediction tools; and
- Recommend next steps.

Prepared by George R. Torok, Gerald R. Genge Building Consultants Inc. and Allan L. Major, ALM Consulting. CMHC Project Officer: Luis de Miguel. Ottawa: Canada Mortgage and Housing Corporation, 2005. (External Research Program Report) 93 pages (3120 KB)

Note: No. 05-117 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order no. 64911)

STATUS : Completed Report and Research Highlight

AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Predictingtimetofogging(w).pdf

REVISIONS TO BRICK VENEER STEEL STUD BEST PRACTICE GUIDE

The objective of this project is to produce a revised version of CMHC's Brick Veneer Steel Stud Best Practice Guide, published in 1996. New research and user feedback from seminars based on the guide and from CMHC's web site indicate that some details need updating. Partnerships have been developed with interested parties for input, review and promotion. A national competition was held to select the consultant responsible for coordinating and producing the revision work. The consultant, Jim Posey, is working with an advisory committee, specific to the BVSS guide, which participates in drafting the new edition. The advisory committee includes practitioners, industry representatives, manufacturers and regulators. The work has commenced with a thorough study of the existing Brick Veneer Steel Stud Guide, including an analysis of users' feedback, followed by roundtable critique sessions. Public sessions were held to discuss the proposed revisions. The consultant then collected the information, produced the revised manuscript and is now in the process of obtaining consensus from the advisory committee. Revisions to the text and details are with the advisory committee for their comments. The revised Brick Veneer Steel Stud Guide should be in print in 2007.

CMHC Project Officer : *Barry Craig*

CIDN : 23780200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

SUITABLE ACOUSTIC AND FIRESTOP TECHNOLOGIES

The objective of this research is to develop a Best Practice Guide containing technical solutions for noise control and fire prevention that have been validated by a systematic review process. Although fire resistance and sound transmission ratings are available for a broad range of generic wall and floor assemblies, the building industry needs recognized solutions to ensure satisfactory performance in complete buildings. Accepted practice in one jurisdiction may be unacceptable in neighbouring provinces, or even in other cities in the same province. Designers, plan reviewers, builders, and inspectors, will benefit from a credible and broadly accepted set of solutions for appropriate sound and fire control with firestopping. Designs will be approved by a steering committee including partners from NRC, municipal governments and industry, and advisors from US and Canadian standards agencies. The guide will include details of firestops at service penetrations, barriers to restrict fire spread in concealed spaces, control of noise from plumbing and acoustic leaks at service penetrations. The project began in the autumn of 2004 and should be completed in the spring of 2007.

CMHC Project Officer : *Barry Craig*

CIDN : 32190200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

SUSTAINABILITY CONSIDERATIONS GUIDE FOR BEST PRACTICE BRICK VENEER STEEL STUD WALLS: FINAL REPORT

CMHC's Best Practice Guides both inform the construction industry (architects, engineers, designers, product manufacturers and builders) and encourage higher quality and more durable long term approaches. They have not specifically focused on the challenge of "their" environmental impact. This guide cannot accomplish this in one thrust, but it is the beginning of an ecological sensitization process.

Durability is a cornerstone of sustainable design and as such, assemblies must perform satisfactorily for the intended life of the building with appropriate maintenance. The most sustainable approach to ameliorating BVSS envelope design assemblies is to improve overall energy efficiency and durability while ensuring a healthy environment during all phases of its life cycle.

This report provides guidance relating to building science, structural and buildability issues with a view to maintaining and sometimes improving the performance of BVSS walls while keeping a strong focus on durability, sustainability and the environment.

Sustainability can be considered from both the macro (societal impact) and the micro (project impact) perspective.

- Societal consequences include direct or indirect harm to the regional ecosystem, such as water pollution, air pollution, resource depletion, as well as to the global ecosystem, such as green house gas emissions and depletion of the ozone layer.
- Numerous sources outline their definition of *green building materials,* and this guide does not attempt to redo this work. Direct project consequences related to green building material selection include: envelope durability, indoor air quality, energy loss, water pollution, and embodied energy (including re-use and recycling within their life-cycle).
- Defining green building materials is challenging, but prioritizing their performance with respect to which criteria is *more* important is even more difficult. Often the interests of the direct material application (ie: indoor air quality) takes precedent over larger societal contamination issues (such as the dumping of materials at the end of their life in landfills where their toxic loading in the environment can be way more dramatic).
- In some instances there are products that can be used which, by definition, may not be environmentally sound, but the manner in which they are used may help reduce the overall environmental impact of the building.
- Although this guide does not cover the following dimensions of a building's life cycle, they may impact exterior envelope design decisions: occupancy type (both current and potential future changes), retrofit and deconstruction.

Fourteen large scale details illustrate the practical application of the principles and recommendations of the text. Hygrothermal simulations were performed to validate the soundness of the details.

Prepared by Daniel Pearl and Bernard Olivier with the collaboration of Dominique Derome and Jan Vrana. CMHC Project Officer: Luis de Miguel. Ottawa: Canada Mortgage and Housing Corporation, 2006. 64 pages (2520 KB)

STATUS : New Completed Report

AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Sustainability(w)_august8.pdf

CANADIAN WOOD-FRAME HOUSE CONSTRUCTION. REVISED EDITION

This trusted guide has been a national bestseller among Canada's housing professionals for years. The updated version for the latest National Building Code contains new illustrations, sizing tables, planning notes and tips on healthy housing to improve indoor air quality and reduce environmental impact. An indispensable tool for builders, renovators and do-it-yourselfers, covering everything from site excavation to completion. Topics include: concrete work, footings and foundations; framing all parts of the house; roof sheathings; exterior finishes, trims and millwork; plumbing, heating and wiring; vapour and air barriers; insulation, fire and sound control; ventilation; interior wall and ceiling finishes, floor coverings; stairs, eaves, chimneys, and much more.

*Prepared by John Burrows, J.F. Burrows Consulting Inc. Second combined Imperial/Metric edition. Ottawa: Canada Mortgage and Housing Corporation, 2005. 429 pages **Price $25.95 + GST + shipping charges*

Nota : Aussi disponible en français sous le titre : Construction de maison à ossature de bois -- Canada

STATUS : Completed Publication

AVAILABILITY : CMHC Information Products (Order number 61010)

CANADIAN WOOD-FRAME HOUSE CONSTRUCTION TECHNIQUES AND PRACTICES FOR APPLICATION IN OTHER CLIMATES

The purpose of this research project was to demonstrate how to adapt Canadian wood-frame house construction techniques and practices in other countries with different climates. The resulting research report entitled "Durable Wood-frame Construction for All Climatic Zones: A Companion to Canadian Wood-Frame House Construction" is divided into three parts. The first part covers well-established building science principles for building envelope durability. The second part breaks new ground in the development of a series of methods that allows a designer or builder to select a particular wall construction based on local site conditions and climatic data drawn from a NASA weather data base maintained on the world wide web. The third part provides examples of durable wood-frame building assemblies for all climate zones found around the world. The report focuses on the durability of the building envelope, and covers other related aspects of construction (e.g. ventilation and termites). The final report is expected by the end of 2006.

CMHC Project Officer : *Barry Craig* **CIDN** : 27290200

Division : Policy and Research Division ***STATUS*** : Ongoing

AVAILABILITY : Product is not yet available

CONFERENCE SUPPORT FOR CANADIANS FOR PROPERLY BUILT HOMES 'ESSENTIALS FOR PURCHASING A NEWLY - BUILT HOUSE WORKSHOP'

CMHC is supporting the non-profit consumer advocacy organization Canadians for Properly Built Homes (CPBH) to develop a day-long interactive consumer workshop aimed at advancing housing quality through an understanding of the roles of participants in the new house purchase process. CPBH's objective is to increase the competency of the consumer to make informed purchase decisions. The format of the workshop is to involve experts on real-estate law, warranty, municipal building standards, house inspection, and construction (new home builders) in presentations and discussion. The workshop entitled 'Essentials for Purchasing a Newly-Built House' was presented as a pilot in two regions of Canada. This will help address the knowledge needs of prospective new home purchasers. CMHC presented its "About Your House - How to Hire a Home Builder" information. Workshops were held in Ontario and in Atlantic Canada in 2006.

CMHC Project Officer : *Barry Craig* **CIDN** : 34090200

Division : Policy and Research Division ***STATUS*** : Ongoing

AVAILABILITY : Product is not yet available

GLOSSARY OF HOUSING TERMS - UPDATE

The purpose of this project is to review the current edition of Glossary of Housing Terms and conduct research to identify new terms and definitions which are missing. The Glossary of Housing Terms was last updated in 1995, resulting in the absence of a number of new housing terms, some of which are included in CMHC's new information products. A few examples of new housing terms missing from the Glossary of Housing Terms include: surfactants, enthalpy recovery ventilator, building science, polyolefin, xeriscaping, pyrite, stachybotrys chartarum and brownfields. All the existing terms and definitions will also be reviewed to ensure they are still appropriate and that the definitions are accurate. A new section with construction related acronyms and abbreviations, and terms common to large multiple unit residential buildings will also be added. The revised Glossary of Housing Terms should be available in 2007.

CMHC Project Officer : *Barry Craig*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 33070200
STATUS : Ongoing

SEMINAR ON THE PROPER INSTALLATION OF WOOD I-JOISTS

The purpose of this project was to develop training material, e.g. trainers manual and visual aids, validated through a pilot training session, for a one day seminar on the proper installation of wood I-joist floor systems. Most of the material was based on the "Installation Guide for Residential Wood I-Joist Floor Systems" but was expanded to cover the actual installation process. The guide, and its accompanying pocket guide, serves as the participants' handout and resource material. The seminar will be delivered by the APA The Engineered Wood Association. Other delivery means may be explored as well. The seminar is targeted to builders, renovators, building officials, home inspectors and the affected trades who work with wood I-joists. The seminar has been prepared and opportunities to present it are now being explored.

CMHC Project Officer : *Barry Craig*
Division : Policy and Research Division
AVAILABILITY : Seminar/training is not yet available
CIDN : 32220200
STATUS : Ongoing

SEMINARS ON THE TECHNICAL CHANGES IN THE 2005 NATIONAL CONSTRUCTION CODES

The Canadian Commission on Building and Fire Codes (CCBFC) completed the latest updates to the model national codes and published the revisions in September, 2005. The new Model National Codes contain substantial changes and a new objective-based approach to fulfilling the building requirements. Architects, engineers, builders, inspectors and building officials will benefit from training in the changes to the new codes, and the protocols for proposing new approaches to fulfill the requirements of the codes. The training will be tailored to the needs of the Atlantic Provinces and will identify the specific adaptations each province makes to the model code. CMHC is contributing to the development of two day seminars on the changes in the 2005 Model National Codes being developed by the Atlantic Home Building and Renovation Sector Council (AHBRSC) with support from the Canadian Home Builders' Association (CHBA), and offered to builders and renovators, building officials, inspectors, architects and engineers. A course manual will be prepared during 2006. The seminars should be offered in several cities in the Atlantic Provinces during 2007.

CMHC Project Officer : Barry Craig
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 34190200
STATUS : Ongoing

CONTRIBUTION TO RESEARCH PROJECTS AT THE CANADIAN CENTRE FOR HOUSING TECHNOLOGY

In co-operation with NRC and NRCan, CMHC will continue to support research projects to evaluate energy efficiency technologies on the performance of the test houses at the Canadian Centre for Housing Technology (CCHT). Several technologies have already been evaluated at the facility, and research reports are available from the CCHT web site http://www.ccht-cctr.gc.ca/documents_e.html. CMHC Research Highlights on 4 of these projects are available from CMHC's Web site. Several other projects are being considered for testing and evaluation by the CCHT's Research Committee, which represents the three partners, Canada Mortgage and Housing Corporation, Natural Resources Canada and the National Research Council of Canada.

CMHC Project Officer : *Ken Ruest*
CIDN : 32090200
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

INDOOR ENVIRONMENT

FEASIBILITY STUDY FOR INVESTIGATING THE RELATIONSHIP BETWEEN INDOOR AIR QUALITY AND SEVERE RESPIRATORY TRACT INFECTIONS IN INUIT INFANTS IN BAFFIN REGION, NUNAVUT

CMHC has contributed to a study investigating the relationship between indoor air quality and severe respiratory tract infections in Inuit infants in Baffin region, Nunavut. The initial work was carried out in conjunction with the Children's Hospital of Eastern Ontario, Health Canada, Natural Resources Canada, the Nunavut government and Nunavut health and housing agencies. Testing took place over the winter of 2003 in 20 houses in Cape Dorset. It included air quality measurements, blower door testing, and long term air change rate measurement. These results show that some of the houses are under ventilated, but that air quality is similar in many aspects to more southern housing. A follow-up project with the partners explored ventilation solutions in Nunavut communities. The second phase surveyed air change rates, carbon dioxide levels, and occupancy factors in 100 houses in four Nunavut communities, to see if the Cape Dorset results are typical. Low ventilation rates were measured in many of the houses and corresponding high CO2 concentrations resulted. A CMHC Research Highlight on the pilot project and the 100 house survey has been issued ("Nunavut Housing Ventilation Research 2003-2005", Research Highlight Technical Series 05-116). The current phase involves the installation of HRVs in 100 existing Nunavut houses and an analysis of the effects on occupant health. The project team is hoping to have the HRVs installed in the fall of 2006, with the health monitoring taking place over the winter of 2006/2007.

CMHC Project Officer : *Don Fugler*
CIDN : 27570200
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Research highlight is available (Order no. 64913)

See also: INDOOR AIR QUALITY TROUBLESHOOTING GUIDE FOR PROPERTY OWNERS AND MANAGERS, p.52

LET'S CLEAR THE AIR INDOOR AIR QUALITY (IAQ) INITIATIVE

This initiative delivers information on indoor air quality in the home to targeted audiences, the end result of which will benefit Canadian homeowners and occupants. Basic information to increase awareness and appreciation of indoor air problems is through the one-day Let's Clear the Air seminar (for housing and health professionals) or the Build and Renovate to Avoid Mold workshop (for builders, renovators, architects, real estate and insurance appraisers). A second day consisting of a site visit to a home with an IAQ expert demonstrates the IAQ investigation method. Qualified individuals can proceed to the CMHC Residential Indoor Air Quality Investigator Training Program. Individuals who complete the training program acquire the skills to inspect homes for IAQ problems and to provide informed advice to homeowners on how to correct these problems. As a private business, they offer their professional services to the public for a fee. Individuals interested in the program can contact Virginia Salares (e-mail vsalares@cmhc.ca, tel 613 748-2032, fax 613 748-2402), the training coordinator (e-mail: info@iaq-qai.com, telephone 819 827-3915) for admission requirements and application forms. For referral purposes, a list of persons having completed the training is available from CMHC offices.

CMHC Project Officer : *Virginia R Salares*	***CIDN*** : 16230300
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Seminar/training is available	

RESIDENTIAL MARIJUANA GROWING OPERATIONS AND CLANDESTINE NARCOTICS LABORATORIES - HEALTH AND SAFETY ISSUES FOR CONSUMERS AND IMPLICATIONS FOR CMHC

In partnership with the RCMP and the CSA (Canadian Standards Association), CMHC is undertaking a study of the extent of damage and contamination due to mold or chemicals in houses that have been used for growing marijuana. A first phase study of ten grow houses has shown the lack of uniformity and unnecessary costs involved in the methods of assessment that are presently employed. Damage to the houses from neglect or disconnection of hydro can be more serious than from the growing operation. Further research has been identified to ensure that Canadians buying homes previously used to grow marijuana are protected. There is also a need for a standardized protocol for assessing grow houses and a method to ensure that proper remediation is carried out. The results, to be available in late 2006, are anticipated to be used by external organizations.

CMHC Project Officer : *Virginia R Salares*	***CIDN*** : 32180200
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

YEARLY VARIATION IN BIOLOGICAL CONTAMINANTS

Ten houses that have previously been characterized for biological contaminants during the winter have been retested a year later to determine the variability of microbiological markers. The data is being analyzed to identify climatic and other factors that may affect year to year measures of biological contaminants in houses. The validity of "one point in time" testing to characterize multi-year biological contaminant loads in houses during the winter will be assessed. This project will increase knowledge of yearly winter variations in microbiological loads in houses, and of testing procedures that provide the most repeatable long term building microbiological markers. One potential outcome would be the confirmation that CMHC's methodology of assessing IAQ problems by inspection alone is still the most accurate assessment of biological contamination without expensive testing or lab analysis. This may also indicate which testing methodology represents the most stable indicator of long term biological indicators in houses. The results will be available in spring 2007.

CMHC Project Officer : *Ken Ruest*	***CIDN*** : 32160200
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

FEASIBILITY OF UTILIZING A PORTABLE HOUSING PLANT FOR SINGLE FAMILY-DETACHED CONSTRUCTION

This External Research project is studying the economic feasibility of using an automated, mobile plant to produce houses that are 90-95% complete when they leave the plant. The plant would be erected in the subdivision where the houses are to be built (with basement foundations pre-installed), and once the construction program is complete, the plant would be dismantled and shipped to the next locale. The final report has been received and has been reviewed by the Manufactured Housing Institute Canada and the Federation of Canadian Municipalities. The report is being edited and layouts for a typical community master plan are being developed, including alternate street designs and mobile plant locations. The project is expected to be completed by spring 2007.

CMHC Project Officer : *Chris Ives*
CIDN : 23050201
Division : External Research Program
STATUS : Ongoing
AVAILABILITY : Product is not yet available

PROFILE AND PROSPECTS OF THE FACTORY-BUILT HOUSING INDUSTRY IN CANADA

The focus of this study is to develop a profile of the factory-built housing sector, paying attention to evidence and possibilities for further integration between the factory-built sector and the larger Canadian homebuilding industry and with an eye on the level of innovation that factory-built housing can bring to the Canadian homebuilding industry.

The residential construction sector in Canada contributes about $80 billion to the Canadian construction sector annually. The factory-built housing sector in Canada is still quite small – production in the sector amounts to approximately $1.2 billion. Despite its small size, the factory-built sector is an important component of the homebuilding industry. A successful factory-built housing sector has great potential to create further opportunities for the Canadian home building industry by expanding Canadian housing exports, meeting environmental challenges, and contributing to innovation in the homebuilding sector.

This report combines principal data on the size and scope of the factory-built housing industry with interviews and field visits to provide a broad examination of the factory-built housing sector in Canada. As well as examining the current state of the factory-built sector, forecasts and prospects for the future are incorporated and discussed. The outlook portion of the report includes analysis of future possibilities for technology and production methods and integration between the factory-built and on-site built sectors.

Prepared by Clayton Research Associates Limited. Ottawa: Canada Mortgage and Housing Corporation, 2006. 114 pages (2757 KB)

Note: No. 06-017 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65220)

STATUS : Completed Report and Research Highlight
AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Profileprospects(W).pdf

DEVELOPMENT AND ASSESSMENT OF CRAWL SPACE REMEDIATION STRATEGIES

This 2006 External Research Program project will investigate the performance of 8 Prairie crawl spaces that have been retrofitted in the last several years to deal with moisture problems. The series of case studies will include the nature of the initial problem, a description of the remedial measures applied, and an analysis of the success (or failure) of these measures following a site investigation. There has been no field work on the project yet. Completion is likely due at the end of summer 2007.

CMHC Project Officer : *Don Fugler*	***CIDN*** : 34380203
Division : External Research Program	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	***NEW***

DEVELOPMENT OF DRIVING RAIN MAPS AND LOADS FOR CANADA

The objective of this External Research project is to develop maps of Canada and nomographs that quantify the driving rain load for different types of buildings across Canada. More specifically, the research will (1) extend and document existing driving rain prediction methodologies, (2) collect, analyze and interpret hourly driving rain information as it relates to building enclosure performance, (3) create climate maps and tables that are as useful for the design of building enclosures as current structural load maps and tables are for the design of structural members, and (4) generate a range of statistics and correlations that improve our understanding of the driving rain load and its variation with climate. This project is expected to be completed by fall of 2006.

CMHC Project Officer : *Silvio Plescia*	***CIDN*** : 26470207
Division : External Research Program	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

DYNAMIC BUFFER WALLS

Moisture control within new and renovated buildings in cold climates is a critical design component for the successful performance of the exterior building envelope. Currently, moisture control is achieved by architectural means through integral air barrier assemblies on exterior wall and roof assemblies. Some construction practices and operational activities often render these assemblies ineffective resulting in premature assembly failure. The dynamic buffer zone (DBZ) is a relatively new way of controlling moisture in the cavity. A DBZ is created by introducing dry conditioned air into and out of interstitial exterior wall cavities by means of dedicated mechanical systems in such a manner as to constantly ensure positive pressure within the cavities relative to interior environments. This light pressurization prevents humid indoor air from leaking into the exterior wall cavity, thus stopping condensation and subsequent moisture accumulation and damage. In fact, it creates an air barrier using air. This project, through actual installations and by computer modelling, aims to develop design guidelines in the use of DBZ by determining the optimal parameters of the air introduced in the cavity. These include: volume, pressure and temperature. The length of time the system needs to be operational, the fan size and number, cavity volume and energy use and payback. The project has been contracted and computer modelling has begun. A search has started for a residential building in which to install a test system.

CMHC Project Officer : *Duncan Hill*	***CIDN*** : 33130200
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

HOW IMPORTANT ARE DEHUMIDIFIERS IN PREVENTING MOLD IN HOUSES?

This study will test the effectiveness of dehumidifiers in managing relative humidity in basements. Measurements of relative humidity and moisture readings of selected surfaces will be taken in houses of varying ages and characteristics when a dehumidifier is running and when it is turned off. A pilot study of three matched houses in the same area, conducted in the fall of 2004, has recommended that houses in three regions - Ontario/Quebec, BC/Atlantic and Prairies, be studied over a full year period with dehumidification when needed. A larger study will monitor 30 houses in different regions for one year without dehumidification and a second year with dehumidification. The project will start in October 2005 and finish in December 2007.

CMHC Project Officer : *Virginia R Salares*

CIDN : 32170200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

INVESTIGATING MOISTURE IN SEASONAL HOUSING: FINAL REPORT

This research examined moisture issues in unoccupied houses. There are many dwelling types that do not have occupants for long periods of time. These would include houses where the homeowners go south for a large part of the winter, second houses, houses deserted for periods due to natural disasters, rental houses without occupants for extended periods, and cottages. Unoccupied houses often suffer moisture related damages to building materials, finishes, and house contents. In many cases, there should be simple ventilation solutions that will reduce or eliminate these moisture problems. This project investigated the types of moisture problems found. The Nova Scotia contractor analyzed moisture sources and removal methods, and then recommended solutions for a variety of sample dwellings. The solutions depended on whether the unoccupied spaces have electrical power, and functioning heating or ventilation systems. The findings suggest that many of the moisture-troubled houses have familiar foundation problems that require traditional repairs.

Prepared by Abri Sustainable Design & Consulting. CMHC Project Officer: Don Fugler. Ottawa: Canada Mortgage and Housing Corporation, 2005. 128 pages (6329 KB)

Note: No. 05-120 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order no. 64942)

STATUS : Completed Report and Research Highlight

AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Investigatingmoisture(w).pdf

MODIFY AND UPGRADE WALLDRY COMPUTER PROGRAM

The objective of this project is to modify and upgrade WALLDRY, a computer program developed by CMHC, which models the flows of moisture, heat and air through wall assemblies in response to given external climatic loads and interior temperature and humidity conditions. Project completion is expected by December 2006.

CMHC Project Officer : *Silvio Plescia*

CIDN : 25050200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

POTENTIAL FOR MOISTURE PROBLEMS DUE TO PLASTIC SHEETING IN WALL ASSEMBLIES

This project is examining whether plastic air-vapour barriers currently used in Canadian wall assemblies are an asset or a problem. There has been significant criticism recently of the use of plastic in above-grade and basement wall assemblies, in that plastic limits the ability of the wall to dry into the house, and that it provides a condensing plane for water vapour driven into the wall when the sun heats the exterior sheathing. The research will assess the criticisms levelled against plastic sheeting and will compare the use of plastic to other alternatives, using hygrothermal modelling. Field testing in new houses and test huts was completed in the summer of 2006. Testing took place in basement and above-grade walls. Simulation, analysis, and reporting is expected to be completed by the end of 2006.

CMHC Project Officer : *Don Fugler*
CIDN : 32150200
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

TESTING THE EFFECTIVENESS OF CLEANING TO REDUCE EXPOSURES OF OCCUPANTS TO MOLD

This study proposes to test the effectiveness of thorough and regular routine cleaning of moldy houses in reducing occupant's exposure to mold. The pilot phase of the study on two houses was completed in 2004. A second pilot to establish the cleaning procedure was completed in 2005. Six houses with carpets were studied. Initial concentrations of dust mites, bacterial endotoxins and fungal glucans varied from house to house. A professional cleaner used a top quality HEPA vacuum cleaner and followed a strict cleaning protocol to clean two houses twice a week and four houses once a week for six weeks. Reductions in weights of fine dust particulates required several cleanings. The results of the first two pilots are available. The next phase will apply the methodology developed from the six-house study to 15 moldy houses in a First Nations community.

CMHC Project Officer : *Virginia R Salares*
CIDN : 24480200
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

WATER PENETRATION TESTING ON WALL SYSTEMS

There is an overall lack of good, qualitative data to compare the drainage characteristics of various claddings, drainage cavity configurations and building materials in wall assemblies. In some jurisdictions across Canada, rainscreen or cavity wall construction will be required (mandated) to manage the expected exterior moisture loads; the City of Vancouver Building By-laws have already mandated the use of rainscreen wall systems. Many new products have been introduced into the marketplace in recent years, which claim to promote and/or improve drainage characteristics and drainage performance of wall systems. However, the actual performance of these products has not been fully evaluated or understood. The objective of this project is to perform laboratory tests to investigate how effectively different drainage cavity configurations (including wall assemblies with proprietary drainage media) are able to drain water or retain water within the cavity space. The study will also investigate where in the wall assembly the moisture is entrapped and how long the wall assembly will dry out (under isothermal conditions). This project is expected to be completed by the winter of 2006 - 2007.

CMHC Project Officer : *Barry Craig*
CIDN : 25620200
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

MOISTURE AND MOLD

WIND-RAIN RELATIONSHIPS IN SOUTHWESTERN BRITISH COLUMBIA - PHASE II

Canada Mortgage and Housing and the Homeowner Protection Office are funding a two and a half year field study, undertaken by the British Columbia Institute of Technology to further investigate the Wind-Rain phenomena in Southwestern British Columbia. This project will study the spatial distribution of the rain on buildings given differing building geometries with and without overhangs, building size and terrain features. Correlations between the amount of rain impinging on vertical building surfaces and both the on-site weather station and the nearest meteorological station will also be investigated. This project is expected to be completed in 2008.

CMHC Project Officer : *Silvio Plescia*	***CIDN*** : 33840200
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

See also: IN-SITU MONITORING OF WOOD-FRAMED EXTERIOR WALL ASSEMBLIES, p. 35-36
Items in the Building Materials section, p. 13-15

NORTHERN HOUSING

FEASIBILITY OF ALTERNATIVE ENERGY EFFICIENT HOUSING SERVICES FOR THE COMMUNITY OF NORMAN WELLS, NWT

This project will evaluate the feasibility of using decentralized services for a proposed small cluster of new houses in the northern community of Norman Wells, NWT. It will evaluate the infrastructure needs for the housing, evaluate the potential for an alternative infrastructure system (e.g. Economad) and make recommendations on alternative systems that could be installed to meet the growing needs for services for housing in the community. This will include the evaluation of the potential for heating with district heating provided by a co-generation plant (either diesel or natural gas fired) with the waste heat being used to heat the houses. As an additional innovation the cluster would be grid connected to provide an electricity back-up and as a demonstration of distributed generation. Based on the recommendations, the study will evaluate the ability of the community to successfully install, operate and maintain the systems. Based on expected energy and other operating costs, the study will include a cost benefit analysis of the alternative systems. The project will be the first phase of a two stage project that will subsequently include the monitoring of the energy and cost effectiveness of the installed decentralized infrastructure systems, if these are selected to supply services to new housing in the community. This project will increase the level of knowledge concerning the viability of alternative systems for the supply of services to northern communities. This project will form part of "Evaluation of Local Building Services serving Clustered Housing in Northern and Remote Communities". The project will begin in late 2006 with a report available in mid 2007.

CMHC Project Officer : *Chris Ives*	***CIDN*** : 33270200
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

GREEN ENERGY FOR REMOTE HOUSING IN THE NORTH: ASSESSMENT OF AN INTEGRATED ENERGY SYSTEM UTILIZING FUEL CELLS: FINAL REPORT

This project involved the evaluation, field-testing, development, demonstration and deployment of fuel cells to meet power and space heating requirements of homes in remote communities of the Canadian North. The main objectives of the project were to assess fuel cell technology, to analyze its feasibility for stationary applications in the Canadian North, and to conduct economic analysis for integrating renewable energy with hydrogen fuel cells.

Different types of fuel cells were assessed with respect to their applicability to northern communities. The project was conducted to determine if fuel cells are economically feasible for stationary purposes in five communities in the Inuvialuit region of Northwest Territories: Inuvik (pop. 2,894), Tuktoyaktuk (pop. 930), Sachs Harbour (pop. 114), Holman (pop. 398), and Paulatuk (pop. 286). However, major analysis, conclusions and recommendations are based on the conditions found in Holman, which the authors studied for a possible pilot project.

The basic premise of this project was to study the deployment of a 2 kW or 3 kW hydrocarbon-based fuel cell in a single home to replace the grid electricity supplied from diesel and natural gas generators presently used by the Northwest Territories Power Corporation (NTPC). The costs of deploying the fuel cells over a 10 to 20 year period were compared to the present total cost of energy for single homeowners. An additional case study was conducted to see the feasibility of a 50 to 80 kW hydrocarbon fuel cell system in an apartment complex in Inuvik. An economic feasibility study was also conducted for the integrated wind-hydrogen-fuel cell system.

Modelling and financial analysis was done using widely recognized software tools, HOMER™ and RETScreen®. The analysis was conducted using several scenarios. Results indicated that the integrated wind-hydrogen-fuel cell systems are economically viable for most of the cases covering more than 20% of the population of a small community, such as Holman.

Prepared by Aurora Research Institute. CMHC Project Officer: Thomas Green. Ottawa: Canada Mortgage and Housing Corporation, 2005. (External Research Program Report) 90 pages (7182 KB)

STATUS : Completed Report

AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Greenbacks%20from%20green%20roofs.pdf

INNOVATIVE USE OF SHIPPING CONTAINERS FOR SHELTER HOUSING

This two stage project will first assess the feasibility and acceptability of providing shelter for the homeless on a seasonal or as required basis using recycled shipping containers (or other prefabricated components) suitably modified for Canadian housing needs. The project will proceed to a second stage if the approach appears suitable and cost effective for either or both southern and northern communities. Demonstration shelter units will be serviced by micro utility modules (or external utility rooms) according to on site infrastructure needs. All components of the project will be portable and relocatable as the need or demand indicates, as well as being aesthetically acceptable and fully functional. The project will demonstrate a low cost portable system to provide seasonal shelter of good quality for the homeless, but is not intended as a replacement for long term conventional housing.

CMHC Project Officer *: Chris Ives*

Division : Policy and Research Division

AVAILABILITY : Product is not yet available

CIDN : 31890200

STATUS : Ongoing

NEW

INTEGRATED DESIGN AND EVALUATION OF A CONSTRUCTED NORTHERN SUSTAINABLE HOUSE (E/2 PROTOTYPE)

In this partnership project, an "E/2" house will be designed and constructed by a First Nations community and/or a northern housing agency. The house will be designed and constructed to consume less than 50% of the Model National Energy Code of Canada for Houses energy requirements and be suited to northern culture and lifestyles. Input from the community and the northern housing provider will be included in both the design and evaluation of the E/2 House Prototype. Evaluation of the project will include monitoring the energy performance of the house, carrying out a cost/benefit analysis of the energy savings of the E/2 House vs. a typical new house in the community, and carrying out an analysis of the success of the cultural design issues being addressed in the design. CMHC's role will involve facilitating design workshops, assisting with the house design, and performance evaluation of the E/2 House Prototype. The project will incorporate knowledge and connections being gathered in northern design charrettes, with the work to be carried out in consultation with a northern community and northern housing provider. The project is sponsored in part by the Program for Energy Research and Development (PERD). The research will be completed by December 2008.

CMHC Project Officer : *William Semple*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 33240200
STATUS : Ongoing

REDUCING ENERGY USE OF NORTHERN HOUSING BY HALF - PART 3: BUILDINGS AND COMMUNITIES / INTEGRATED DESIGN CHARRETTES FOR SUSTAINABLE BUILDINGS AND COMMUNITIES

As part of the intergovernmental strategy to reduce energy requirements in the North and improve housing conditions, Integrated Design Charrettes are being carried out in northern communities with the residents/builders and community leaders with the goals of sustainable improvements and lower costs in their buildings and communities. The strategies generated from this initiative will enable northern communities to reduce energy and water costs significantly. This project involves the organization and facilitation of community design charrettes in northern communities to formulate improved solutions to meet their evolving housing needs. The charrettes provide an opportunity to align the thinking of various experts, community builders, local inhabitants and municipal leaders about the potential for the design and construction of sustainable northern housing as well as a thorough discussion of the barriers and challenges that must be overcome. It will also provide a technique for northern communities to rethink their community plans, their process of design and better northern housing delivery options using sustainable objectives which are adapted to their needs. The charrettes will be completed by the end of 2008. A report documenting the outcome of each or all charrettes will be available following each event. The most recent charrette Research Highlights from Arviat and Yellowknife are available. A new charrette is being organized with the City of Whitehorse.

CMHC Project Officer : *Sandra Marshall*
Division : Policy and Research Division
AVAILABILITY : Product is available on the web
CIDN : 33690200
STATUS : Ongoing

See also: **SUSTAINABLE HOUSING IN THE NORTH, p. 74**
FEASIBILITY STUDY FOR INVESTIGATING THE RELATIONSHIP BETWEEN INDOOR AIR QUALITY AND SEVERE RESPIRATORY TRACT INFECTIONS IN INUIT INFANTS IN BAFFIN REGION, NUNAVUT, p. 43

NORTHERN HOUSING

REDUCING RESIDENTIAL ENERGY IN THE NORTH THROUGH THE USE OF ADVANCED ENVELOPES (083)

This project, to be conducted in cooperation with a northern housing agency partner, will involve developing design and construction details to carry out the renovation of an existing northern house and the evaluation of the potential for removing the existing utilities in the house to an exterior utility unit. The project will include developing building envelope details (i.e. walls, windows, doors etc.), and construction plans for the energy retrofit of the building envelope and changes in the location of the building utilities (i.e. to the Exterior Utility Room). As part of the design process, this will include carrying out an analysis of potential renovation details for the North, undertaking an energy modelling evaluation of the plans for the energy retrofit to ensure that the performance levels (a minimum reduction in energy consumption of 50% from the existing building) will be attained, and identifying issues that need to be addressed in the development of the External Utility Room. The project will be carried out in 2006 with a report available in 2007.

CMHC Project Officer : *William Semple*	***CIDN*** : 33220200
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

PROPERTY MANAGEMENT

DEVELOPMENT OF AN ENERGY MANAGEMENT PILOT PROGRAM FOR SOCIAL HOUSING IN ONTARIO

CMHC is participating in the development of an Energy Management Program and pilot project for social housing. CMHC will be working with the Social Housing Services Corporation of Ontario to develop an Energy Management Program that will provide local social housing providers with the tools needed to evaluate and implement energy and water efficiency measures in their buildings. CMHC support will be used to develop or adopt tools for the Energy Management Program including utility tracking and on-line energy/water audit facilities, standard energy audits, and communication documents for property owners, managers and residents. CMHC will also participate in the evaluation of energy and water efficiency projects in 20 buildings selected to participate in a pilot project to evaluate the costs and benefits of the Energy Management Program. CMHC support will be useful to establish the Program in Ontario and will also provide other provinces with useful information on the development of central energy programs for their social housing stock as well. The project report will be available in 2007.

CMHC Project Officer : *Duncan Hill*	***CIDN*** : 29820200
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

INDOOR AIR QUALITY TROUBLESHOOTING GUIDE FOR PROPERTY OWNERS AND MANAGERS

A guide for identifying and resolving indoor air quality problems in multi-unit residential buildings will be developed for property owners and managers. The guide will provide instructions for detecting, identifying and resolving common problems relating to the indoor environment in both common areas and individual apartments. Information will also be provided as to when such activities should be referred to an expert. The guide is primarily directed at owners and managers but the information on specific problems and solutions will be presented in such a way that it could be provided to the occupants of individual apartments. The project will be completed in late 2007.

CMHC Project Officer : *Duncan Hill*	***CIDN*** : 3050-PLN03
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

CANADIAN HOME INSPECTORS AND BUILDING OFFICIALS NATIONAL INITIATIVE PHASE II

The overall objective of this multi-phased Canadian Home Inspector and Building Official (CHIBO) national initiative is to raise the level of competency of the private home inspection industry, the municipal building officials, and the First Nations building officers and establish a qualified and recognizable industry to better serve their clients. Phase I activities resulted in the development of Occupational Standards for each of these sectors. Phase II, which built on the results of the Phase I, is now complete. The primary objectives of Phase II, to develop certification and accreditation models for the inspection industry, have been met. The certification and accreditation models are to be implemented by the industry sectors in 2006. Technical Research Highlight 04-112 summarizes this research project and is available on the CMHC Web site.

CMHC Project Officer : *Ken Ruest* ***CIDN*** : 25150200

Division : Policy and Research Division ***STATUS*** : Ongoing

AVAILABILITY : Research highlight is available (Order no. 63547)

SUPPORT FOR THE DEVELOPMENT OF INFRASTRUCTURE TO IMPLEMENT THE NATIONAL CERTIFICATION AND ACCREDITATION MODEL FOR HOME AND PROPERTY INSPECTORS

This project is a contribution to the Canadian Association of Home and Property Inspectors (CAHPI) to assist in the development of the infrastructure required to administer the National Certification and Accreditation program for Home and Property Inspectors. The pilot phase of the project is going very well. The projected date for the launch of the certification program, beyond the pilot phase, is in late fall 2006. Information about the certification program can be obtained from CAHPI's web site at www.cahpi.ca. Additional background information on the development of this national initiative may be found in the CMHC Research Highlight: Canadian Home Inspectors & Building Officials National Initiative (Order no. 62629).

CMHC Project Officer : *Ken Ruest* ***CIDN*** : 34150200

Division : Policy and Research Division ***STATUS*** : Ongoing

AVAILABILITY : Product is not yet available

SUSTAINABLE DEVELOPMENT & HEALTHY HOUSING

ADVANCEMENT OF COMPETENCY IN INTEGRATED SUSTAINABLE BUILDING DESIGN - SUPPORT OF CONCORDIA UNIVERSITY IN THE 2005 'SOLAR DECATHLON'

In this project, and as one of various contributors, CMHC supported the Canadian team entry led by Concordia University to participate in the 2005 Solar Decathlon in Washington D.C. Based on a preliminary competition, nineteen teams were selected to participate in this event; the majority of the teams were from the United States, with one each from Canada, Spain and Puerto Rico. The nineteen university teams built small solar houses, of about 60 to 70 square metres in size, on the National Mall in front of the Capital Building in October 2005. The objective was to design a completely solar powered house that is self-sustaining for an entire week. Specified requirements included minimum lighting levels, acceptable interior temperature range, water usage and hot water temperature levels. The houses must be able to accommodate normal domestic tasks such as laundry, cooking and showering. CMHC's involvement included financial and implementation support to the process, technical advice and guidance, and creating and transferring knowledge on renewable energy based sustainable housing. This project's overall outcomes are:

1) To illustrate how solar energy can improve Canadian's quality of life: solar energy is clean; it significantly reduces pollutant emissions; and solar energy is renewable thereby increasing a nation's energy security.
2) To teach the solar decathletes and the public about how energy is used in their daily lives and to illustrate the energy intensity of various daily activities.
3) To demonstrate that market-ready technologies exist that can meet the energy requirements of our daily activities by tapping into the sun's power.
4) To meet these needs while providing an attractive structure in which to live, work and play.

A related long-term objective of this project is to build enhanced alliances between project partners leading to the capacity development for a future Canadian Solar Decathlon competition. A final summary report will be available late in 2006.

CMHC Project Officer : *Thomas Green* ***CIDN*** : 32060200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

DEVELOPING A FRAMEWORK FOR COSTING GREEN BUILDINGS

Work is underway on this project which aims to develop an easy-to-use life costing calculator to estimate cost/saving and payback of green technologies for both single and multi-unit buildings. This tool is aimed at builders to help their clients choose alternative, more efficient energy and water use. The calculator will be designed to work with readily available economic input data to take account of expected initial and recurring costs, and will be capable of extending the analysis over a suitable time period to capture all relevant effects in a discounted cash flow analysis (e.g., 60 years). The output from the tool will be numerical and, possibly, a graphical display. There will be a review of rating systems developed by others (Alberta, CaGBC, BC, NRCan) as one means of identifying potential technologies that have readily definable and tangible benefits that can be taken into account in a life cycle cost analysis. The consultant has drafted a list of twelve technologies that will be used in comparing 'standard' and 'green' construction and to illustrate the use of the calculator. The report will be available in December 2006.

CMHC Project Officer : *Duncan Hill* ***CIDN*** : 31630200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

DEVELOPING A GREEN RATING SYSTEM FOR RESIDENTIAL BUILDINGS

This project was comprised of three separate but related parts. The first part of the project was carried out to support the research and facilitation of a multi-stakeholder process for the development and implementation of an Action Plan to address the issues surrounding the use and application of LEED for Multi-Unit Residential Buildings (MURB's). The goal of this part of the project was to develop recommendations on i) what issues arising from the use of Green Rating Systems need to be addressed; and ii) how to build support in the private and public sector on the application of Green Rating Systems for MURB projects. Undertaken by the Canada Green Building Council (CaGBC), the funding partners included CMHC, the Greater Vancouver Regional District (GVRD), the CaGBC and NRCan. The results of this part of the project contributed to the development of guidelines for the application of LEED in multi-unit residential buildings. The guide is available through the CaGBC.

The second part of the project involved providing support for the training of the building trades of members of Built Green Alberta through the development of a programme by Southern Alberta Institute of Technology (SAIT) for the Calgary Region Home Builders' Association (CRHBA). The goal was to develop a programme for training the construction trades in green building techniques, specifically for the builders taking part in the Built Green Alberta Programme, a programme developed by the Calgary Region Home Builders' Association to assist in the delivery of 'green' buildings to the marketplace.

In the third part of the project, CMHC carried out research to evaluate two existing green rating systems for the low-rise residential sector, Built Green Alberta and LEED for Homes, made recommendations for making improvements to the existing rating systems and evaluated and made recommendations for the development of a comprehensive green rating system for the residential market. The third part of the project was completed in August 2006 and a report will be available by December 2006.

CMHC Project Officer : *William Semple* ***CIDN*** : 32100200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

DEVELOPMENT OF A SUSTAINABLE PERFORMANCE ASSESSMENT TOOL FOR HOUSING

An External Research project was initiated to develop a sustainability performance assessment tool for housing in Canada. The project will provide a comparison between typical Canadian market housing circa 1985 and the one currently provided by the market, focusing on basic functional attributes as well as energy and environmental performance of a small number of typical housing units. The performance comparison will use data provided by a major Canadian housing developer regarding standard housing unit types. The data will be entered into a modified version of the GBTool rating framework providing ratings relative to weights and benchmarks suited to housing types and regional conditions. The issues to be considered include gross unit area, storage area, household equipment, neighbourhood density, assumed population/hectare, embodied energy (envelope and structure only), operating energy consumption, indoor air quality, estimated TVOCs, affordability, safety and security. The source of data will include drawings, specifications and data from CMHC, NRCan and from a developer for both 1985 and 2005 units. As with the base version of GBTool, the residential version will enable third parties, such as housing agencies, municipalities or professional associations, to adjust weights and criteria to suit local conditions. It will consist of a range of assessment possibilities from a single family house to the multi-unit residential apartment building. The project will be completed late in 2006.

CMHC Project Officer : *Woytek Kujawski* ***CIDN*** : 28920211
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

NET ZERO ENERGY HEALTHY HOUSING (NZEHH) FRAMEWORK, GUIDELINES AND SPECIFICATIONS

This project will develop a framework, guidelines and specifications for the creation of net zero energy healthy housing in Canada, representing important improvements to community and building design, regulations, and innovative financing (such as direct lending), in support of sustainable housing and healthy communities. The project will adopt a fully integrated, comprehensive approach to housing design and development (in all forms), involving:

1. Energy efficiency, passive solar and sustainable community planning issues, to reduce energy demands by about 80% (actual target to be set in project) or more of typical housing.
2. Integration of passive solar design and renewable energy technologies (photovoltaics, solar thermal, ground source heat, small scale wind, hydro, etc.) to cover the remaining small energy loads.
3. Establishment of design/development parameters and targets of other sustainable housing features such as emissions, land use (greenfield, brownfield, infill, etc.), water (use, re-use, recycling, rainwater capture, etc.), community plan related transportation impacts, ecological footprint, etc.

The main deliverables of this project involve: the development of planning, design and construction guidelines and specifications for the creation and demonstration of NZE Healthy Housing across Canada, providing technical support for NZEHH house location, design, technology selection, performance targets, equipment identification, estimated costs, innovative financing, monitoring and evaluation protocols, and marketing and communication support and messages. The project deliverables will form the foundation for a national NZE Healthy Housing demonstration and implementation initiative through a Federal/Provincial/Territorial/Municipal and Industry partnership to advance new Canadian housing towards the net zero energy consumption goal, with major reductions in housing related resource consumption and emissions.

CMHC Project Officer : *Thomas Green* ***CIDN*** : 33940200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

NET ZERO ENERGY HOUSING ECONOMIC AND ENVIRONMENTAL VIABILITY STUDY

This project is a partnership between Industry Canada and CMHC, to assess the sustainability implications and enhance knowledge of the potential benefits of Net Zero Energy Housing (NZEH) in Canada. The results of the project will be compiled into a report offering an analysis of the viability, economic and environmental potential of the NZEH concept in five regions across the country. As well, a communication document will be produced that provides a clear understanding of the NZEH concept, highlighting its economic, social and environmental benefits to Canada; opportunities for wider stakeholder engagement; and a visual layout or image of an NZEHome. The report and draft brochure produced for this project (supported by Industry Canada with a contribution from CMHC) will be used for internal purposes for the planning and development of a Canadian zero energy healthy housing initiative.

CMHC Project Officer : *Thomas Green* ***CIDN*** : 29780200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : There will be no product for this project

NSERC CANADIAN UNIVERSITY NETWORK ON "SOLAR ENERGY UTILIZATION IN BUILDINGS"

CMHC is supporting a new Natural Sciences and Engineering Research Council of Canada (NSERC) funded University Network on "Solar Energy Utilization in Buildings", to achieve the objective of enhancing the capacity of the residential industry to develop solar buildings with substantially reduced purchased energy needs. The overall vision of the Network over its five year period will be to advance the adoption of new knowledge, tools, practices and technologies for cost effective construction of solar zero-net-energy buildings in Canada. The main objectives of the Network over its five-year research program are the following:

1. To develop effective techniques for integration of solar collection, storage and utilization systems in the building envelope.
2. To develop and improve solar energy utilization technologies so as to reduce cost and raise overall efficiency.
3. To develop and demonstrate affordable, reliable, building integrated, distributed power generation systems based on solar energy for residential and commercial buildings.
4. To develop simulation design tools and methodology that may be effectively utilized throughout the design process.
5. To transfer these outputs to the end users.
6. To contribute to the development of government policies and programs aimed at fostering the adoption of solar technologies in buildings.

The Solar Buildings Network will begin its first year of a five year work plan in 2006.

CMHC Project Officer : *Thomas Green*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 34020200
STATUS : Ongoing

O.U.R. ECOVILLAGE: THE DEVELOPMENT OF A MODEL DEMONSTRATION SUSTAINABLE VILLAGE: FINAL REPORT

The objective of this report, partially funded under the Affordability and Choice Today (ACT) Program, was to describe the development of the O.U.R. (One United Resource) Ecovillage, a sustainable land management project being developed by the registered non-profit organization entitled, O.U.R. Community Association.

The development of O.U.R. Ecovillage has focused on a number of regulatory issues related to sustainable land use and sustainable housing. The major work this project has accomplished is in the area of:

1) creating a new zone, the Rural Residential Comprehensive Development Zone, that permits a combination of land uses, also referred to as full-featured sustainable land management design;
2) the development and construction of a performance based model for researching and analyzing cob construction used in tandem with other construction techniques (i.e.: straw/clay infill, claybrick, and strawbale hybrid construction);
3) the design and construction of permeable road surfaces, alternative wastewater treatment systems (i.e.: raised reed-bed hybrid system), the creative models for use of greywater, rainwater harvesting and reinvesting, all for residential use; and
4) the development of an alternative land trust covenant for environmental protection of the land rather than attempting to covenant the property through conventional means of regional district covenants.

The report provides an overview of the project, details the methodology used, and outlines the project results. The appendices provide: the site plan & design diagrams; the O.U.R Ecovillage Protective Convenant; and the Interim Report.

Prepared by O.U.R. Community Association, Shawnigan Lake/Cowichan Valley Regional District, BC. Unpublished manuscript. 46 pages

STATUS : New Completed Report
AVAILABILITY : Report is available on a loan basis from Canadian Housing Information Centre

REGINA AFFORDABLE SOLAR HOUSING

Current economic and demographic conditions have led to a well recognized need for the creation of a diverse array of affordable housing solutions across Canada. At the same time, it is critical that housing built today will provide a healthy environment that is sustainable in terms of energy and resource use and impacts on land, air and water. This project addresses these combined challenges by developing affordable solar urban infill housing design solutions that revitalize urban environments, dramatically reduce impacts to natural systems, and create affordable and desirable communities to live in. The project output will be a descriptive and visual presentation of affordable solar housing designs for specific urban sites in Regina, developed by graduate students in the McGill University School of Architecture program, and targeted to the designer, builder and developer audiences. The project is a partnership between CMHC, the City of Regina, McGill School of Architecture Affordable Housing Program, and the Saskatchewan Housing Corporation. Results available in fall 2006 will include general information on the innovative design studio approach, concept designs and examples of affordable solar housing designs for specific sites in Regina.

CMHC Project Officer : *Thomas Green*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 28020200
STATUS : Ongoing

REGIONAL PILOT DEMONSTRATION OF NET ZERO ENERGY HEALTHY HOUSING

This project involves the Creation of a national Net Zero Energy Healthy Housing (NZEHH) demonstration and implementation initiative through a Federal/Provincial/Territorial/Municipal (F/P/T/M) and Industry partnership to advance new Canadian housing towards a net zero energy consumption goal.

The initial project concept involves an Industry/F/P/T/Municipality partnership with implementation in phases: the start of this initiative would see NZEHH demonstrations being integrated into sustainable community plans across Canada within 18 months. This first phase is part of a plan for community-scale demonstrations of 1500 NZEHH homes involving all provinces and territories to be underway within five years under this initiative.

Net Zero Energy Healthy Housing follows CMHC&rsquo;s five principles for sustainable housing, combining sustainable community planning, passive solar, energy efficient design, construction and appliances, with commercially available grid tied renewable energy systems to achieve net zero energy consumption and reduced green house gas emissions on an annual basis.) The intended results and impacts of the NZEHH initiative are to develop strategic alliances between industry and government to reduce the energy intensity of our housing sector, mitigate household energy cost increases in the medium term, foster a growing renewable energy and sustainable housing industry in Canada, increase consumer awareness and demand for sustainable housing, and support Canada&rsquo;s goal of reducing green house gas emissions. The development of NZEHH will also ensure Canada&rsquo;s inclusion in competitive international markets and our next generation of value added exports.

CMHC Project Officer : *Thomas Green* **CIDN** : 35490200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available ***NEW***

SOUTHFIELD SOLAR HOME MONITORING AND EVALUATION CASE STUDY

This project is a partnership between Natural Resources Canada and Canada Mortgage and Housing Corporation, with the participation of Thomasfield Homes Ltd., and Nexus Solar Corporation. The project will describe the design, and do modelling and monitoring of the Southfield solar EnviroHome in Guelph, Ontario, to indicate the measured energy delivery of each of the Southfield's renewable energy system upgrades as compared to the conventional systems in the Argyle house (next door), and to a hypothetical Southfield house built to Ontario Building Code standards. The houses are of similar size with similar market features except that the Southfield house incorporates passive solar design, a solar domestic hot water system, and photovoltaic panels, as well as some other advanced energy systems including a demand water heater, and is built to the EnviroHome standard. The project results will provide an understanding of real field results through on-site research/monitoring, and reveal the successes and remaining challenges of incorporating commercially available renewable energy systems into a standard housing development. The study will also create a reporting format for identifying and comparing key features of energy-efficient houses. A final report and CMHC Case Study on the project will be available late in 2006.

CMHC Project Officer : *Thomas Green* ***CIDN*** : 29790200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

SUPPORT FOR "SUNNY DAYS AHEAD" - A FORUM ON SOLAR ENERGY FOR GOVERNMENT OFFICIALS

CMHC provided financial support to the Forum on Solar Energy for Government Officials entitled "Sunny Days Ahead", held in Ottawa, Ontario, on March 22, 2006. This event marks an important start to engaging a broader array of Canadian government partners (federal, provincial and municipal), and increasing their awareness of the benefits of solar energy technologies - how they work, their potential, their costs and their applications. Forum sessions covered the topics of: Solar Technologies and Markets; Government Initiatives in Canada and in Other Nations; Solar Installations on Government Buildings in Canada; Programs to Use Solar in Government Applications; and Round Table Discussion on Solar Opportunities for Canada. Solar energy is the fastest growing energy source in the world. It is projected that by 2050 solar technologies will be supplying over 25% of the total energy needs of many nations. However, Canada is lagging far behind these other countries in its development and application of solar energy technologies, and needs to develop a coordinated approach involving all levels of government and industry promoting solar energy solutions to ensure a clean environment and healthy cities for generations to come. A full Forum report is available through the Canadian Housing Information Centre.

STATUS : New Completed CD-ROM

AVAILABILITY : CD-ROM is available on a loan basis from Canadian Housing Information Centre

SUPPORT FOR THE ASTHMA EDUCATION CENTER AT THE OTTAWA HOSPITAL

A demonstration house built by CMHC and previously known as the Research House for the Environmentally Hypersensitive was acquired by the Ottawa Hospital. Launched in 2006 as The Breathing Space, it will function as an education center for people with asthma, chronic obstructive pulmonary disease (COPD) and other respiratory diseases. CMHC's contribution to the Respirology Division of the Ottawa Hospital will measure over the next two years the level of knowledge of patients about clean housing prior to visiting the house and the adoption and implementation of information as a result of the visit.

CMHC Project Officer : *Virginia R Salares*

CIDN : 33000200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

TAP THE SUN: REVISION AND UPDATE

This project will revise and update the CMHC "Tap the Sun" publication and accompanying CD-ROM. "Tap the Sun" is a primer on passive solar design, and presents various passive solar techniques and Canadian home designs. The revised "Tap the Sun" product will include important data updates, a wider selection of case study projects, more detailed key resources, and improvements to the integrated tools such as the Comfort Design Checker and the window products design database. As well, the accompanying CD-ROM will include other related software tools such as the RETScreen Solar Heating Module by NRCan. The revised product will be available in late 2006.

CMHC Project Officer : *Woytek Kujawski*

CIDN : 25450200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

See also: Socio-economic research on Sustainable Development & Healthy Housing, p. 117-120

ALTERNATIVE STORMWATER MANAGEMENT - WATERSHED RESTORATION

CMHC will contribute to the Federation of Canadian Municipalities grant winning project in Saanich, B.C. This work will see the development of a number of integrated stormwater planning, design and management tools for builders, developers, and municipal staff. These tools will assist in smart urban development by providing a means for assessing watershed health and prioritizing areas for restoration thereby allowing stakeholders to make informed choices on urban development and stormwater management. The ecologically engineered storm water management tools presented here will improve stormwater drainage systems, improve water quality and reduce the negative impact of stormwater infrastructure on the environment by utilizing an ecological system that has a greater resilience to drought and flooding in the face of climatic changes. Project completion and report submission are scheduled for Spring 2008.

CMHC Project Officer : *Catherine Soroczan*	***CIDN*** : 33880200
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

DO PRESSURIZED AT-GRADE ON-SITE SEWAGE SYSTEMS PROVIDE QUALITY TREATMENT COMPATIBLE WITH THE LANDSCAPE?

At-grade wastewater treatment systems are currently approved for use in Alberta. However, recent research indicates that full sewage treatment does not always occur. This External Research study will examine 2-3 installed systems and assess the performance efficiency of an altered distribution pattern. Parameters to be measured include moisture content, bacterial counts, and nutrient content changes in the soil layer to which effluent has been applied. The final report is due in January 2007.

CMHC Project Officer : *Catherine Soroczan*	***CIDN*** : 28920209
Division : External Research Program	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

ENERGY INTENSITY OF CANADIAN WATER SYSTEMS

CMHC in partnership with NRCan, Greater Vancouver Regional District, and B.C. Hydro, is leading a multi-stakeholder study to determine the energy intensity of water systems in Canadian urban centres. The objective will be to quantify the amount of energy used within water and wastewater systems and the potential energy impact of water conservation. Energy intensity profiles will include:

- extraction and conveyance of water imported from outside a local watershed;
- extraction of local surface and groundwater sources;
- treatment and distribution of potable supplies; and
- wastewater collection, treatment, and discharge.

Total energy inputs are region specific as they are dictated by factors such as: water quality and availability, climate patterns, settlement patterns, level of treatment, treatment processes used, topography, distribution pumping and pressurization requirements, etc. In order to allow for comparison between study areas, an attempt will be made to develop a meaningful method to normalize water related energy use. Potential performance indices include energy use per capita, per hectare served, per fixture served, etc. This work will provide an opportunity to evaluate the methodology used in the project, the availability of the required inputs, the usefulness of the output derived and the potential applicability to other jurisdictions. The project is expected to be completed by spring 2007.

CMHC Project Officer : *Catherine Soroczan*	***CIDN*** : 32290200
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

EVALUATION OF ENZYMES OR BACTERIAL ADDITIVES FOR THE REHABILITATION OF FAILED LEACHING BED SYSTEMS

The proposed research aims to determine the viability of using biological septic system additives (enzymes and/or bacterial cultures) to rehabilitate leaching beds experiencing trench failure. In addition, the data collected during the execution of the proposed study will also assist in developing an application methodology for homeowners, if appropriate. Project completion and final report submission is scheduled for March 2008.

CMHC Project Officer : *Catherine Soroczan* — ***CIDN*** : 34380207

Division : External Research Program — ***STATUS*** : Ongoing

AVAILABILITY : Product is not yet available — ***NEW***

EVALUATION OF EXPERIMENTAL ONSITE WASTEWATER SYSTEMS IN HEAVY CLAY SOILS AND COLD CLIMATES

This project will assess the performance of shallow/at-grade experimental onsite wastewater treatment systems in heavy clays and in cold climates. Parameters to be assessed will include: biofilm characteristics and treatment performance textile filters, hydraulic performance of soil systems, and temperature impacts. A final report is due May 2007.

CMHC Project Officer : *Catherine Soroczan* — ***CIDN*** : 28370215

Division : External Research Program — ***STATUS*** : Ongoing

AVAILABILITY : Product is not yet available

EVALUATION OF THE IMPACT OF WATER SOFTENER DISCHARGE ON SEPTIC SYSTEMS

Previous studies on the impact of water softener discharge on septic systems have been inconclusive, leading to conflicting regulatory requirements and potential damage to or extra costs for septic systems. This research project was undertaken cooperatively by CMHC and the University of Guelph, Alfred College with collaboration from Agriculture Canada and guidance from the provinces of Ontario, B.C. and Alberta. The work determined the impact of water softener discharge to septic systems. Testing was undertaken on 30 households (15 with water softeners and 15 without). Physical, biological and chemical analysis throughout septic systems was used to assess salt impact on bacterial population, detention time, and leach field soil permeability. Variables were determined such as number of household occupants, age and type of septic tank, and frequency of water softener rejuvenation. This work was undertaken in parallel with a study to determine septic tank bacterial morphology.

Note: No. 06-110 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order no. 65257)

CMHC Project Officer : *Catherine Soroczan* — ***CIDN*** : 32320200

Division : Policy and Research Division — ***STATUS*** : Ongoing

AVAILABILITY : Pesearch Highlight is available

EVALUATION OF WATER CONSERVATION PRACTICES

This research will provide municipalities with guidance in creating a cost effective water efficiency plan (WEP). The use of a standardized WEP will allow for practical and useful comparisons between water efficiency programs implemented across Canada. A template WEP will be developed to incorporate the variety of necessary parameters to be considered such as water source, population size and growth, regional socio-economic, climatic and geographic conditions, infrastructure status, target changes in water demands and wastewater flows, projected capital works and related costs, and cost/benefit. The WEP template will include a software database for creating a water efficiency plan plus a report documenting the key components of water efficient planning. The final report is anticipated to be published by December 2008.

CMHC Project Officer : *Catherine Soroczan* ***CIDN*** : 30550200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

RAINWATER HARVESTING - DEMONSTRATIONS

CMHC is supporting innovative projects with the Cities of Toronto and Guelph to advance rainwater harvesting technologies and strategies in the Canadian residential sector. A rainwater harvesting system for toilets and irrigation will be incorporated and monitored in a highrise multi-unit residential building in downtown Toronto. A multi-goal project with the University of Guelph will serve to pilot rainwater harvesting applications for indoor and outdoor residential use while addressing technical and regulatory issues related to design, certification, approvals and performance. Information from Canadian and international examples regarding code issues, plumbing issues, technology design and performance issues will be adapted. The Cities of Toronto and Guelph will support the projects by working to remove any municipal obstacles that may preclude this work. Results from this work will be used to promote and increase awareness regarding the feasibility of rainwater harvesting for onsite reuse particularly for large scale residential developments. The project will be completed by November 2007.

CMHC Project Officer : *Catherine Soroczan* ***CIDN*** : 33190200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

SLOPING SAND FILTERS FOR ON-SITE WASTEWATER TREATMENT

The overall objective of this External Research Project Grant is to develop and test design guidelines for Sloping Sand Filter (SSF) systems which maximize treatment performance while minimizing construction costs. The hydraulic characteristics and treatment performance of SSFs operated at different loading rates will be assessed within this study. These field studies will supply the data needed to calibrate and test a SSF hydraulic model. The model, once tested, will be used to develop and refine design guidelines for SSF systems. Project completion and submission of the final report are scheduled for August 2008.

CMHC Project Officer : *Catherine Soroczan* ***CIDN*** : 34380205
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available ***NEW***

SUPPORT FOR NATIONAL ONSITE WASTEWATER RESEARCH PROGRAM

CMHC in conjunction with the Canadian Water and Wastewater Associations and the provincial onsite associations of Ontario, Alberta, and B.C. will work with national stakeholders across the country to address research and policy gaps in the area of decentralized wastewater management. The network will identify and prioritize all research and policy issues, and leverage funding to address these issues and communicate the results across the country. As a starting point, CMHC will support targeted research for the development of onsite wastewater technology verification and installation standards.

CMHC Project Officer : *Catherine Soroczan* — ***CIDN*** : 35720200

Division : Policy and Research Division — ***STATUS*** : Ongoing

AVAILABILITY : Product is not yet available — ***NEW***

SUPPORT FOR THE CREATION OF A NATIONAL HOUSEHOLD RECLAIMED WATER GUIDELINE AND DUAL PLUMBING STANDARD

This project supports the development of a National Guideline for Residential Reuse Water Quality and a National Standard for Dual Plumbing Systems. The Water Quality and Health Bureau of Health Canada and Canada Mortgage and Housing Corporation (CMHC) are examining the water quality requirements that would allow sustainable reuse of water in a residential setting without imposing unnecessary risks to human health. CMHC is the secretariat to the Household Reclaimed Water Quality Working Group developing the water reuse guideline. The Working Group includes membership from Federal, Provincial and Territorial governments representing the F/P/G Committee on the Health and Environment. Additionally, CMHC is supporting the Canadian Standards Association (CSA) technical committee that will address issues of cross contamination and back flow prevention through the creation of a National Standard for Dual Plumbing Systems. Close links and co-ordination will be established between these efforts. The CSA B128 Technical Committee on Non-potable Water Systems has released a draft of the standard for public review. The CSA standard B128 is now completed and available through the CSA.

STATUS : Completed

AVAILABILITY : Canadian Standards Association

SUPPORT FOR THE CREATION OF A NATIONAL WATER REUSE PROGRAM

CMHC will work with stakeholders from various government levels, associations, private industry and research centres to establish a Canadian national residential water reuse research and development program of work. This program will address gaps including: policy needs, risk analysis, design standards, pricing strategies, technology performance criteria, enhanced pilot testing and technology demonstration, national guidelines and regulations and innovative technology support for export to developed markets.

CMHC Project Officer : *Catherine Soroczan* — ***CIDN*** : 35730200

Division : Policy and Research Division — ***STATUS*** : Ongoing

AVAILABILITY : Product is not yet available — ***NEW***

VALIDATION OF AN ONSITE WASTEWATER RISK ASSESSMENT MODEL: FINAL REPORT

Failing onsite wastewater systems can pose a significant risk to public health and to the environment. An easy to use risk assessment model using readily available information would be a useful tool for regulators and can be used to prioritize onsite system re-inspection programs. Such a model has been developed and successfully applied to 19 villages within the City of Ottawa.

The model is comprised of a series of weighted risk factors applied to lot parcels in a GIS database. The factors were developed using existing data readily available to a municipality (soils, flood plain, parcel and building mapping, census data, aquifer vulnerability study, local hydro geological knowledge). The factors attempt to account for contaminant loading, contaminant pathways and operational life of onsite systems.

Data was collected from two field inspection campaigns and from replacement system records of the City of Ottawa to validate model parameters. The field inspection campaigns found no correlation between ground and surface water quality and indications of system malfunction; however, both system age and clay soils were found to be significant indicators of system failure. An analysis of onsite system replacement records indicates that system age is a determinant factor in hydraulic system failure, with the relative risk increasing by a factor of 5 for systems of 10-29 years and by a factor of 12 for systems 30 years and older. Soils also play an important role, with risk of failure generally increasing by a factor of 2 for systems installed in areas of impermeable soil.

The Risk Assessment Model was simplified and transformed to reflect our better understanding of the impact of system age and soil type on system failure rate. The revised Risk Model includes six factors: System Age, Soil, Lot Size, Depth to High Groundwater Table, Aquifer Conductivity, and Proximity to Surface Water.

Prepared by Ontario Rural Wastewater Centre, Collège Alfred - University of Guelph; authors: Chris Kinsley & Doug Joy. CMHC Project Officer: Cate Soroczan. Ottawa: Canada Mortgage and Housing Corporation, 2006 (External Research Program Report) 38 pages (2116 KB)

Note: No. 06-111 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order no. 65259)

STATUS : New Completed Report and Research Highlight

AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/ValidOnsite-w.pdf

SOCIO ECONOMIC RESEARCH

ABORIGINAL HOUSEHOLD, HOUSING AND COMMUNITY CONDITIONS BASED ON THE ABORIGINAL PEOPLE'S SURVEY (APS)

The consultant hired for this project has completed consultations with stakeholders both internal and external to CMHC, including all National Aboriginal Organizations (NAOs). He is now using the consultation results to identify and develop an analysis plan and an assessment of data requirements in preparation for the analysis of custom data linking Statistics Canada's post-censal Aboriginal People's Survey (APS) to CMHC's custom 2001 Census-based housing conditions indicators. The development of data specifications and the research issues to be analysed will arise through consultations between the consultant, Housing Indicators and Demographics (HID) staff at CMHC, stakeholders internal to CMHC (mainly Policy and Research Division's Distinct Housing Needs, and Assisted Housing Divisions, with involvement from the Market Analysis Centre and also Insurance), Indian and Northern Affairs Canada, and the NAOs. Based on these specifications, Statistics Canada will produce the custom data, which will be analysed and applied to the research issues (using the analysis plan developed through the consultation process). The 2001 APS is the single most comprehensive source of information on household, housing and community conditions faced by Canada`s Aboriginal Peoples. The APS will be linked to CMHC's 2001 Census-based core housing needs indicators and the combined data analysed to profile the housing and community challenges facing each of Canada's Aboriginal peoples. Research findings will then be published via research reports/highlights and an electronic data base specific to Aboriginal housing conditions will be developed and released.

CMHC Project Officer : *John E Engeland*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 35760200
STATUS : Ongoing
NEW

ABORIGINAL HOUSING: LOCAL DESIGN AND MATERIAL

This project responds to opinion that house designs found in Aboriginal communities are inappropriate and that perfectly good building materials exist on reserve but are never used. The project assumes that in fact there are a significant number of examples where off the shelf house designs have been adapted and where local material has been incorporated. The project will identify these examples, and document a selected number of them as case studies. The case studies will produce material suitable for dissemination. The general approach is:

- to build an inventory of past initiatives on increasing the Aboriginal relevance of housing design and on assessing the feasibility of using local materials;
- to select a range of examples from the inventory for case study analysis; and
- to draw conclusions along the lines of "lessons learned."

This project's focus was changed from looking at housing design for new homes to looking at how existing homes have been adapted. An initial scan indicated too few suitable examples of new construction with relevant design features.

Note: No. 05-001 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 63834)

CMHC Project Officer : *Phil Deacon*
Division : Policy and Research Division
AVAILABILITY : Research highlight is available

CIDN : N/A
STATUS : Completed

ABOUT YOUR HOUSE (AYH): HOW TO PREVENT BLASTOMYCOSIS

The objective of this research is to produce a user-friendly, plain language, About Your House (AYH) publication which will outline best practices aimed at reducing and controlling individual and community exposure to the conidia (spores) of Blastomyces Dermatitis which cause blastomycosis.

While providing a general overview of blastomycosis, this project will focus on the geographical area of Thunder Bay and the Kenora, Keewatin, Jaffray Mellick tri-municipal area and surrounding First Nations communities in north-western Ontario.

The About Your House will inform First Nation community members and others on how to reduce their exposure to the blastomycosis-causing spores during e.g. residential construction; residential maintenance work that involves contact with soil (such as under houses or porches, or in sheds that have soil basements); digging or transporting soil in and around the house; gardening; clearing brush around the house; cleaning under porches or stairs; transporting or storing firewood or fur pelts in the house or shed; and working on vehicles in garages that have soil floors.

CMHC Project Officer : *Marcelle M Gareau*	***CIDN*** : 35340200
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	***NEW***

ARCHITECTURE FOR ELDER HEALTH IN REMOTE BRITISH COLUMBIA: A NISGA'A-LED RESEARCH

Influences of housing on health and well-being of First Nations Elders in remote British Columbian communities are explored in this research, which has been completed under the CMHC External Research Program. The research is community-led and facilitated by architect Dr. Nancy Mackin, following principles of participatory research and protocols specified by the Tri-Council and Wilp Wilxo'oskwhl Nisga'a, the Nisga' University College under the direction of President and CEO Deanna Nyce.

The study investigated interrelationships between architecture and health over time.The goal is to understand the changing context of Elder housing so that landscape, architectural and planning decisions affecting Elders' lives can be based upon an understanding of processes that influence community health.

Prepared by Nancy Mackin and Deanna Nyce. Ottawa: Canada Mortgage and Housing Corporation, 2005. (External Research Program Report) 123 pages (5908 KB)

Note: No. 05-030 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 64861)

STATUS : Completed Report and Research Highlight

AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/architectureelderhealth.pdf

DEVELOPMENT OF AN APPROPRIATE TYPOLOGY AND ESTIMATES FOR HOUSING TENURE ON RESERVE

This project will describe the types of tenure that have developed within the context of reserve culture, legislative situation, collective tradition, program context, etc. The project will also develop and pilot test questions on tenure for census or other surveys that are understood by occupants and that are acceptable to administrators. A rough estimate of the degree to which these tenures are found on reserves will be developed through expert consensus.

CMHC Project Officer : *Phil Deacon*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 32850200
STATUS : Ongoing

ECONOMIC IMPACT OF RESIDENTIAL CONSTRUCTION IN FIRST NATION COMMUNITIES: FINAL REPORT

The primary purpose of this study is to estimate the local economic impact of new residential construction, renovations and related infrastructure development projects in First Nation communities across Canada.

The secondary purpose is to analyze the relationship between the impact of residential construction and the level of economic development in the communities. In particular, the authors examine how the relative development of a First Nation affects the overall impact of new housing construction and renovation on that community. Progress in economic development, strategies and barriers are also examined.

The report is structured in a linear fashion and proceeds from a description of the First Nation territories to the estimates of economic impacts. The impact estimation methodology, sample selection, the survey instrument and response patterns, and findings are addressed successively.

Prepared by Informetrica Limited. Ottawa: Canada Mortgage and Housing Corporation, 2006. 88 pages (1286 KB)

Note: No. 06-009 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65048)

STATUS : New Completed Report and Research Highlight
AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Economic%20Impact(w).pdf

ESTABLISHING EFFECTIVE HOUSING MARKETS IN FIRST NATION COMMUNITIES

Based on recommendations of Regional staff and on consultations and/or focus groups with First Nations, and using the information (best practice/critical success factors) obtained in the Part IX Home Ownership Implementation Strategy, the project will identify a number of First Nation communities that are desirous of and willing to introduce a home ownership product in their community. It will investigate whether the availability of a homeownership option in the community will contribute to resolving the housing problems in the community. This could include First Nations wishing to use the Loan Insurance Pilot product. The project consultant will recommend a number of First Nations to be part of this project, and will layout a proposed implementation plan based on the individual First Nations chosen. They will work with the community to identify any shortfalls in understanding, knowledge, skill, policy and process, and will provide tools, direction, training, capacity development, guidance, and solutions to the identified problems. The project will document the process followed, highlighting the pitfalls, obstacles to success and opportunities for improvement for First Nations wishing to implement their own program. It will include establishment of a tool kit of resources needed to introduce and implement Home ownership programs including such things as: i) introducing the home ownership concept to the community ii) determine demand for home ownership iii) establishing housing management systems. The results of the project will be highlighted and communicated to client groups via a Research Highlight; a highlight which First Nation communities can refer to in the development of their own program, specifically the pursuit of a functioning housing market via homeownership on reserves.

CMHC Project Officer : *Kathy Hague*
Division : Assisted Housing Division
AVAILABILITY : Product is not yet available
CIDN : 32831500
STATUS : Ongoing
NEW

ESTABLISHMENT OF ON-RESERVE HOUSING AUTHORITIES

The research project will investigate and document the critical success factors associated with housing authorities or similar structures. This will aid First Nation communities in their quest for more efficient and effective housing system management. The report will identify issues, challenges and success factors. A number of potential housing management models will be reviewed to guide First Nations in the establishment of housing institutions, including housing authorities.

CMHC Project Officer : *Line Gullison*

CIDN : 31841500

Division : Assisted Housing Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

EXPLORATION OF HOUSING OPTIONS FOR ABORIGINAL PEOPLE IN EDMONTON, ALBERTA AND WINNIPEG, MANITOBA: FINAL REPORT

This study examined the housing situation and issues of Aboriginal people in Edmonton, Alberta and Winnipeg, Manitoba, and homeownership programs that target Aboriginal participants.

The research summarized relevant literature and examined available statistical data. Twenty key informant interviews were conducted with representatives of organizations that provide housing and other related services to Aboriginal people in Edmonton and Winnipeg. Those who participated in the interviews were individuals who had experience working directly with, and providing a variety of services to, Aboriginal people in one of the cities of interest, and/or were professionals with in-depth knowledge and expertise on urban Aboriginal housing issues. Twelve interviews were conducted in Edmonton, while the remaining eight were conducted in Winnipeg.

Following completion of the interviews, a household survey was conducted with 60 Aboriginal households in Edmonton and 62 in Winnipeg. All survey respondents were over 18 years of age, of self-reported Aboriginal ancestry and resided in the city at the time of the survey.

The review of the literature and key informant interviews were utilized to identify " Initiatives" that could be potential case studies. The research encountered difficulty in identifying Homeownership Initiatives that were oriented specifically towards Aboriginal households in Edmonton and Winnipeg, so the selection criteria was broadened to include homeownership initiatives for all low-to moderate-income households in Edmonton and Winnipeg. The list of potential case studies included a mixture of education programs, rent-to-own home ownership programs, and subsidized housing agencies for Aboriginal renters.

Final selection of case studies was based on the willingness of the agency to participate and the relevance of the initiative to the research. Seven case studies were completed: three in Edmonton and four in Winnipeg. In Edmonton these included: the HOME Program, the Central Edmonton Community Land Trust and the Aboriginal Homeownership Workshops. In Winnipeg these included: the Spence Neighbourhood Association, the North End Housing Project, the Winnipeg Housing Rehabilitation Corporation and Payuk Inter-Tribal Housing Cooperative.

Prepared by R.A. Malatest & Associates Ltd. CMHC Project Officer: Marcelle Gareau. Ottawa: Canada Mortgage and Housing Corporation, 2005. 329 pages (26364 KB)

Note: No. 05-034 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 64900)

STATUS : Completed Report and Research Highlight

AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/CHIC_An%20Exploration(w).pdf

FEASIBILITY OF COMMUNITY RISK MANAGEMENT AS A SUBJECT FOR CAPACITY BUILDING IN ABORIGINAL COMMUNITIES

The objective of this project is to ascertain what are the components of risk management that are relevant in an Aboriginal community context, and to assess these against pragmatic criteria (as to whether the components can be taught in a capacity development environment and carried out by an Aboriginal community). The following tasks are envisaged: to review text and existing course materials; to determine what materials are relevant; to carry out interviews with risk management professionals and institutes, practitioners, CMHC, Indian and Northern Affairs Canada and other capacity development personnel & Aboriginal groups; to do analysis; and to make recommendations for course content and training methods.

CMHC Project Officer : *Ed Nera* — ***CIDN*** : 24280200
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

FIRST NATION HOME OWNERSHIP IMPLEMENTATION STRATEGY

This project will investigate and document the issues, impediments and opportunities of introducing home ownership options into First Nation communities. It will review existing models/mechanisms currently being employed in First Nations communities under the banner of 'home ownership', evaluate the effectiveness of the models and recommend 'best practices' in a final report. The report will identify the benefits of a home ownership component in a community based housing strategy, and recommend strategies to implement/integrate home ownership models into a community.

CMHC Project Officer : *Kathy Hague* — ***CIDN*** : 31701500
Division : Assisted Housing Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

FIRST NATION HOUSING MANAGERS ORGANIZATION

Through a literature review, discussions with key informants and use of focus groups, this project will support investigation of the feasibility and formation of a First Nation Housing Managers Organization through a series of working documents. It will facilitate the formal organization of the group by employing a consultant to meet with housing managers to carry out a work plan drafted in 2005 which may include incorporation of the organization, profile of the sector and soliciting members.

CMHC Project Officer : *Randy Risk* — ***CIDN*** : 32841500
Division : Assisted Housing Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

FIRST NATION HOUSING MANAGERS - PROFILE AND ORGANIZATIONAL NEEDS

This research project will provide a representative profile of on-reserve housing managers; identify gaps in training, education and skills; make recommendations on improving their professional development, assess the feasibility of developing a national representative organization and develop an action plan for its development.

CMHC Project Officer : Karen Bolt — ***CIDN*** : 31851500
Division : Assisted Housing Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

GEOGRAPHIC INFORMATION SYSTEMS: A USEFUL TOOL FOR FIRST NATIONS HOUSING MANAGEMENT, PLANNING, MAINTENANCE AND SAFETY

This 2004/05 External Research Program study will document as case studies the process used by five Cree Nation communities in Quebec to integrate community data and records into a Geographic Information System.

CMHC Project Officer : *Phil Deacon*
Division : External Research Program
AVAILABILITY : Product is not yet available
CIDN : 28920216
STATUS : Ongoing

GUIDE TO CITY HOUSING FOR ABORIGINAL PEOPLE

This product will provide Aboriginal people with practical information concerning how to obtain housing in urban centres. The publication will be a guide for those relocating from small rural and remote communities and also for those in urban centres who need further information concerning housing and homeownership.

CMHC Project Officer : *Marcelle M Gareau*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 34130200
STATUS : Ongoing

PATTERNS AND TRENDS OF URBAN ABORIGINAL RESIDENTIAL SETTLEMENT

This project will investigate the housing patterns of urban Aboriginal people and the links between these and the socio-economic outcomes for these people, either positive or negative, associated with living in Aboriginal neighbourhoods. Housing settlement patterns in the major urban areas of Canada with substantial Aboriginal populations will be described statistically, using established indices for spatial distributions of population (evenness, clustering, concentration, centrality and isolation) at different levels of geographic aggregation. The statistics will be discussed in terms of the pros and cons of the indices and geographies for each urban centre. The statistics will then be input into an analysis with a selection of socio-economic census variables. These variables will be chosen for their potential relevance to social and economic outcomes that have been suggested in the research literature.

CMHC Project Officer : *Phil Deacon*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 25570200
STATUS : Ongoing

PROFILE OF ABORIGINAL HOUSING CONDITIONS USING THE ABORIGINAL PEOPLE'S SURVEY (APS) - DATA ACQUISITION

This initial stage of the Project involves acquiring the data necessary for analysis. Statistics Canada APS data will be linked to CMHC's 2001 Census-based indicators. CMHC has met with Statistics Canada to ensure that APS data can be linked with the 2001 Census core housing need files. Development of data specifications and research issues will arise through consultation with stakeholders, internal and external (National Aboriginal Organizations, and the First Nations Statistical Institute). At this point, a consultant has been hired to develop the specifications to submit to Statistics Canada and then analyze the data.

CMHC Project Officer : *John E Engeland*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 29560200
STATUS : Ongoing

PROJECTING ABORIGINAL HOUSING DEFICIENCIES

The proposal is in three parts. One is to use 2001 census data, supplemented by program administration data, to calculate the housing deficiency for the Aboriginal population. The deficiency is based on CMHC's established housing need measures, but measures both the incidence and depth of need, for on- and off-reserve. Through integration of census with program data on-reserve, the deficiency can be translated into a dollar value, giving an estimate of the cost of "correcting" the Aboriginal housing problem. In the other parts, the Aboriginal population is divided into on-reserve and off-reserve respectively and projected over 20 years, using an up-to-date model that incorporates shifts of identity and geography within the overall class of 'Aboriginal'. On reserve where the main issue is inadequate rate of housing supply, current trends in housing stock construction and losses and rates of repair and disrepair will be calculated and superimposed on the household projections to indicate gains or losses in the size of the housing deficiency. Off reserve where the main issue is low incomes, projection is limited to population and household estimates by the four Aboriginal groups, no attempt being made to project the size of the housing deficiency, which would involve forecasting economic and housing market conditions. Instead, off reserve, two separate research ideas will be pursued - calculating income elasticity of demand for Aboriginal homeownership, and investigating the relationship of residential mobility to resolution of housing needs.

CMHC Project Officer : *Phil Deacon*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 29890200
STATUS : Ongoing

RESPONSIVE RESEARCH INTO ABORIGINAL HOUSING ISSUES: A PILOT PROJECT

The project will fund four research grants to university scholars for studies that combine an Aboriginal perspective, a housing & community focus and strong mentoring of new Aboriginal student researchers. Also included is an evaluation of the grant process. One research study has been completed, which looks at housing issues for Aboriginal post-secondary students. This report is available as "Role of Housing in Aboriginal Student Success - Post Secondary Institutions in Vancouver".

CMHC Project Officer : *Phil Deacon*
Division : Policy and Research Division
AVAILABILITY : See above

CIDN : 25320200
STATUS : Ongoing

SEVEN GENERATIONS. WATER CONSERVATION AND SAFETY. A HOUSING MANAGER'S GUIDE

This research will consist of three components: examining and documenting the types of water problems that are encountered in 10 First Nation communities and their impacts on housing; proposing solutions to alleviate these problems and impacts; and production of a user-friendly plain language guide to water management and safety for housing managers in First Nations communities.

CMHC Project Officer : *Marcelle M Gareau*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 30230200
STATUS : Ongoing

SUPPORTING ABORIGINALLY MANAGED HOUSING OFF-RESERVE

This project is a comparative analysis of the government's approach in New Zealand, Australia and Canada in responding to the housing needs of their indigenous populations, and their urbanization.

CMHC Project Officer : *Phil Deacon* ***CIDN*** : 30070200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

SUSTAINABLE HOUSING IN THE NORTH

The objective of this research is to produce a user-friendly plain language research report that provides a background of "northern" (North of 60) housing in Canada, identifies the types of challenges encountered in northern housing in Aboriginal (Inuit, First Nations, Métis) communities and provides best practice examples of sustainable housing (durable, affordable in construction through use of local materials when possible and in maintenance through provision of energy, water and waste water management at a manageable cost) and sustainable housing components that have proven to be successful in Canada, and in northern countries that have geographic, climatic and resource challenges similar to those in northern Canada and which may be used, or adapted for use, in Canada.

CMHC Project Officer : *Marcelle M Gareau* ***CIDN*** : 32740200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

SYMPOSIUM FOR FIRST NATIONS, HEALTHY/FLEX HOUSING AND SUSTAINABLE COMMUNITY DEVELOPMENT

The project will be organized and coordinated by the region, it will be held in the Okanagan to allow easy access to some 45 First Nation communities in that area. The Symposium would be designed to transfer information on innovative approaches to building residential houses. This information will provide alternative solutions to current challenges faced by First Nations communities. Examples include: overcrowding; aging population; (flex housing); mould contamination (Healthy Housing); lack of standard infrastructure access to utilities such as hydro electricity and natural gas; and ecological considerations (sustainable communities).

CMHC Project Officer : *Line Gullison* ***CIDN*** : 32270200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available ***NEW***

2006 ABORIGINAL POLICY RESEACH CONFERENCE

The 2006 Aboriginal Policy Research Conference sponsored by Indian and Northern Affairs (INAC) and supported by Canada Mortgage and Housing Corporation (CMHC) aimed to allow participation from three groups: researchers, policy-makers, and Aboriginal communities. By promoting interaction between the three groups, the conference hoped to: expand knowledge of the social, economic and demographic determinants of Aboriginal well-being; identify and facilitate the means by which this knowledge could be translated into effective policies; and, allow outstanding policy needs to shape the research agenda within government, academia and Aboriginal communities.

STATUS : Completed
AVAILABILITY : There will be no product for this project

ABORIGINAL HOUSING

USE OF DESIGNATED LAND ON-RESERVE FOR AFFORDABLE HOUSING

This research project will investigate and document the issues, impediments and opportunities in using designated land to facilitate affordable housing on-reserve and will communicate the results to First Nation communities and other stakeholders involved in housing on-reserve.

CMHC Project Officer : *Kathy Hague* ***CIDN*** : 31691500
Division : Assisted Housing Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

See also: Technical Research on Aboriginal Housing, p. 9
ABORIGINAL HOMELESSNESS: A SCAN OF URBAN CENTRES, p. 79
KANATA HEALTHY HOUSING PROJECT, p. 118

CITY PLANNING AND HUMAN SETTLEMENTS

COMPARING CANADIAN NEW-URBANIST AND CONVENTIONAL SUBURBAN NEIGHBOURHOODS

This study will gather and compare data from new-urbanist developments and conventional suburban developments to determine if key objectives of these developments have been realized. Variables to be examined include: car usage for weekday urban travel; access to daily destinations; pedestrian connectivity; housing choice; compactness; occupant satisfaction (e.g. pedestrian safety, aesthetic qualities); access to useful public open/green space; and interaction. The study will derive lessons learned about various neighbourhood design features and how well they achieve key objectives.

CMHC Project Officer : *Susan Fisher* ***CIDN*** : 30610200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

OLD NORTH END SAINT JOHN, NEW BRUNSWICK COMMUNITY PLANNING CHARRETTE

The community of Old North End in Saint John, New Brunswick has a desperate need for housing. The area has experienced a steady decline and a growth in empty lots. Canada Mortgage and Housing Corporation (CMHC) along with the ONE Change Committee, felt the North End would benefit from a community planning charrette and contacted the Cities & Environment Unit to help facilitate it.

The charrette was intended to be as open as possible, and the organizing committee put great effort into inviting as many stakeholders as possible. The process used was based on the First Nation Community Planning Model (2nd edition) which was published by the Cities & Environment Unit in 2003. The model has seven stages that guide communities through the planning process. It was acknowledged that this five day charrette would not result in a fully developed community plan; instead, it would form the basis for future community action based on a shared vision for the Old North End of Saint John. The products and ideas that came out of the charrette are described in this report.

Produced and published by Cities & Environment Unit, Faculty of Architecture & Planning, Dalhousie University; funded by Canada Mortgage and Housing Corporation; CMHC Project Officer: Sandra Marshall. Halifax, N.S.: Cities & Environment Unit, 2005. 65 pages

Note: No. 06-114 in the Research Highlights Technical Series (Order number 65104) summarizes the results of this research and is available on the CMHC web site.

STATUS : Completed Report and Research Highlight
AVAILABILITY : On a loan basis from Canadian Housing Information Centre

REQUALIFICATION DE LA BANLIEUE ET SES CADRES RÉGLEMENTAIRES : SITUATION ACTUELLE ET MESURES D'ASSOUPLISSEMENT : RAPPORT FINAL

This report presents the results of an analysis of the regulations that could influence the regeneration of immediate suburbs. This research, which is based on the case of Québec City, is aimed at better understanding how federal, provincial and municipal normative frameworks can hinder urban requalification. More particularly, this analysis inventories the regulatory frameworks applicable to the different levels of government and scales of intervention, measures and illustrates the impact of certain regulations in relation to urban renovation criteria, identifies different obstacles to suburban requalification and, lastly, proposes possible flexibilities and recommendations.

Prepared by Geneviève Vachon and Carole Després in collaboration with Sergio Avellen H., David Paradis and Nidia Pérez, Groupe interdisciplinaire de recherches sur les banlieues, École d'architecture, Université Laval, Québec. Ottawa: Canada Mortgage and Housing Corporation, 2004. (External Research Program Report) 52 pages (2889 KB)

Note: No. 06-020 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65231)

STATUS : New Completed Report and Research Highlight

AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/fr_unilingue/Chic_R_RequalificationWeb.pdf

RUTLAND TRANSIT CENTRE DESIGN CHARRETTE, KELOWNA, BC

Upon completion of the "Central Okanagan Smart Transit Plan", the City of Kelowna approached Canada Mortgage and Housing Corporation to conduct a design charrette regarding the Rutland Transit Centre site. IBI Group was hired, in turn, by the City of Kelowna to provide design expertise regarding 'best practices' for transit exchange design and transit-oriented development (TOD), and to record and catalogue the proceedings of the charrette experience.

TOD is defined as "compact, mixed-use and pedestrian-friendly neighborhoods containing a range of housing types, workplaces, shops, entertainment, schools, parks and civic facilities essential to the daily lives of residents -- all within an easy five minute walk from a transit station."

The Rutland Transit Centre Design Charrette was held in Kelowna's Rutland community from the evening of Tuesday, 21 June through to the afternoon of Thursday, 23 June, 2005.

This report outlines the events of those three days, plus subsequent actions in support of the goal of laying the foundation for TOD within the City of Kelowna.

Prepared by IBI Group. Vancouver, BC: IBI Group for City of Kelowna. Financial support provided by CMHC, 2005. 1 volume in various pagings

Note: No. 06-002 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 64981)

STATUS : Completed Report and Research Highlight

AVAILABILITY : Report is available on a loan basis from Canadian Housing Information Centre

CITY PLANNING AND HUMAN SETTLEMENTS

URBAN FORM AND SOCIAL INCLUSION

This project will investigate, through a literature review and discussions with key informants, the links between the physical form of a neighbourhood or community, and the creation and strength of social structures that contribute to a sense of inclusion and belonging for the inhabitants.

CMHC Project Officer : *Denis Losier* — ***CIDN*** : 31810200
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

CONTAMINATED LANDS

BROWNFIELD REDEVELOPMENT FOR HOUSING IN CANADA - LITERATURE REVIEW AND CASE STUDIES

This project researched and documented issues and best practices for the redevelopment of brownfield sites for housing across Canada. A literature review was undertaken to update information on issues and barriers to redevelopment of brownfield sites for housing. Key informants, such as developers, municipal planners, other government agencies, financial institutions and legal experts were interviewed. The report (Brownfield Redevelopment for Housing: Literature Review and Analysis) was completed in December, 2004 and includes a summary and analysis of the major findings, including the current key issues as they relate to brownfield redevelopment for housing. Eleven best practice case studies of successful built residential projects and brownfield initiatives in Canada have been completed. Each case study documents land use planning and regulatory approvals, project financing, design and construction, environmental remediation and other special circumstances. The case studies are available for viewing and downloading from the CMHC website at http://www.cmhc-schl.gc.ca/en/inpr/su/sucopl/sucopl_004.cfm

Report prepared by RCI Consulting and Regional Analytics Inc. CMHC Project Officer: Cynthia Rattle. Ottawa: Canada Mortgage and Housing Corporation, 2004. 113 pages (1087 KB)

Note: Nos. 05-013 and 06-015 in the Research Highlights Socio-economic Series summarize the results of this research and are available on the CMHC web site (Order numbers 63948 and 65218).

STATUS : Completed Report and Research Highlights
AVAILABILITY : Product is available on the web

OVERCOMING BARRIERS TO BROWNFIELD REDEVELOPMENT

This project is providing support to the Canadian Brownfield Network, aboutRemediation.com and the Ontario Centre for Environmental Technology Advancement (OCETA), for activities that encourage and build the capacity of key stakeholders for brownfield redevelopment. The project includes support for brownfield knowledge workshops which will be held across Canada. To date, workshops have been held in Saint John, New Brunswick and in various cities in Ontario.

CMHC Project Officer : Cynthia Rattle — ***CIDN*** : 32690200
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

COOPERATIVE AND NON-PROFIT HOUSING

DEVELOPING A STANDARD SET OF FLEXHOUSING/HEALTHY HOUSING FLOOR PLANS FOR USE BY NON-PROFIT HOME BUILDERS

This project will result in standard housing plans, construction details and specifications useful in the factory production of affordable housing units by non-profit builders across Canada, such as Habitat for Humanity. The plans would consist of a series of interchangeable modules to be used in the production of multiple building types such as single-family homes, semi-detached, duplex, etc.

CMHC Project Officer : *Collinda Joseph* **CIDN** : 31940200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

SUSTAINING THE NON-PROFIT SECTOR IN BRITISH COLUMBIA, PHASE II

The Sustaining the Non-Profit Housing Sector in B.C., Phase II project will provide a range of workable solutions to the concerns identified by non-profit housing providers in Phase I of the study and which have to do with: i) expanding the sharing of services/resources and extending bulk purchase opportunities, ii) attracting, training and managing volunteers more effectively, and iii) increasing the scale and professionalism of fund raising. The goal of this project is to develop options which effectively address each of the problem areas and are flexible enough to appeal to housing societies with a broad range of management styles, geographic locations and operational priorities.

CMHC Project Officer : *Stephen G Hall* **CIDN** : 34240200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available ***NEW***

UPDATING THE CMHC ON-LINE GUIDE TO COOPERATIVE HOUSING

The purpose of this project is to update the Cooperative Housing Guide, including both substantive content and reference information such as website links.

CMHC Project Officer : *Ian Melzer* **CIDN** : 32630200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is available at:
http://www.cmhc-schl.gc.ca/en/co/buho/gucoho/loader.cfm?url=/commonspot/security/getfile.cfm&PageID=27549

HOME OWNERSHIP

ESTIMATES OF THE PRIVATE AND SOCIETAL COSTS AND BENEFITS OF HOMEOWNERSHIP IN SELECTED CANADIAN CITIES

This project evaluates the various private and societal costs and benefits of homeownership in six major Canadian cities using information gathered through a review of existing literature and the analysis of a variety of Statistics Canada data sets. Private costs and benefits refer to those accrued to individuals as a consequence of owning a home, while societal costs and benefits of homeownership refer to those borne by society as a whole.

HOME OWNERSHIP

Prepared by Marion Steele and Rakhal Sarker. CMHC Project Officer: Jessica Yen. Ottawa: Canada Mortgage and Housing Corporation, 2005. 189 pages

Note: No. 06-005 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 64990)

STATUS : Completed Report and Research Highlight

AVAILABILITY : Report available on a loan basis from Canadian Housing Information Centre; Research highlight available on the CMHC web site

HOMELESSNESS

ABORIGINAL HOMELESSNESS: A SCAN OF URBAN CENTRES

The intent of this project is to gain a better understanding of Aboriginal homelessness in urban centres in Canada, including developing a better profile of Aboriginal homeless people in urban centres; determining trends in the causes and conditions of urban Aboriginal homelessness; examining current and emerging methods of addressing urban Aboriginal homelessness; and examining the appropriateness of services that are, or can be, available to the urban Aboriginal homeless population.

CMHC Project Officer : *Marcelle M Gareau*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 25560200
STATUS : Ongoing

EXPLORATORY LONGITUDINAL STUDY ON EXITS AND RETURNS TO HOMELESSNESS IN WINDSOR

The research is based on a longitudinal survey of 120 homeless adults in Windsor. The study will examine:

1. factors associated with exits from homelessness into housing;
2. dynamics at play during periods of being housed;
3. factors associated with returns to homelessness for those that become homeless again;
4. in-depth experiences of a subset of those who experience such exits and returns to homelessness; and
5. an appropriate longitudinal methodology that can track and follow people who are homeless.

The participants will be interviewed at two points in time: at baseline and 1 to 2 years after the baseline survey. To be included in the baseline survey, an individual would need to have slept on the streets (including other unconventional sleeping places like a car, an abandoned building), in a shelter, in doubled-up housing where no rent is paid, or in a hotel or motel, within the last thirty days before the baseline interview.

CMHC Project Officer : *Anna Lenk*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 28370202
STATUS : Ongoing

HOMELESSNESS, HOUSING, AND HARM REDUCTION: STABLE HOUSING FOR HOMELESS PEOPLE WITH SUBSTANCE USE ISSUES

The purpose of this study was to investigate the effectiveness of innovative housing programs for persons who are homeless or at risk of homelessness and who use substances (e.g. drugs, alcohol or other substances). The research specifically examined which housing interventions and factors that incorporate a harm reduction approach best help this population access and maintain stable housing.

Three research questions were addressed:
1. How effective are innovative or alternative residential housing programs for homeless people with substance use issues, especially those that incorporate high-tolerance or harm reduction into a supported living environment?
2. To what degree is secure and stable housing crucial to successful substance use treatment models?
3. Do harm reduction strategies, as part of supportive housing, enhance the stability and longevity of housing tenure for homeless people with substance use issues?

Prepared by Deborah Kraus, Luba Serge and Michael Goldberg. CMHC Project Officer: Jim Zamprelli. Ottawa: Canada Mortgage and Housing Corporation, 2006 (Distinct Housing Needs Series) 298 pages (1233 KB)

Note: No. 05-027 in the Research Highlights Socio-econimic Series summarizes the results of this research and is available on the CMHC web site (Order no. 64031)

Disponible aussi en français sous le titre : Itinérance, logement et réduction des méfaits : logements stables pour les sans-abri toxicomanes

STATUS : Completed Report and Research Highlight

AVAILABILITY : CMHC Information Products (Order number 65088)
and
ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_bilingual/RR_english(w)_aug09.pdf

HOUSING OPTIONS ON DISCHARGE FROM CORRECTIONAL FACILITIES: EFFECTIVE PRACTICES IN CANADA

This project examines current programs which assist offenders to find suitable housing at the time of release from provincial and federal correctional facilities, through a literature review and interviews with key informants. Among the questions to be asked:

- what services are available for re-housing on release from federal and provincial correctional facilities?
- which housing interventions are most effective (e.g. release planning, halfway houses)?
- what services are missing?
- what assistance is available to people entering correctional facilities in different provinces to retain their housing?

CMHC Project Officer : *Anna Lenk*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 31880200
STATUS : Ongoing

TRANSFERABILITY OF THE "SAFE IN THE CITY" APPROACH TO YOUTH HOMELESSNESS PREVENTION IN CANADA: FINAL REPORT

The objective of the study was to examine the transferability of Safe in the City, a youth homelessness prevention program based in London, England, to the Canadian context. The goals of Safe in the City were to help young people stay safely at home, find alternative options for those who could not remain safely at home, and develop the life-skills and employability of young people to enable them to make a smooth transition to independent lifestyles. The transferability of this model of service delivery to the Canadian context is discussed, as are existing Canadian initiatives addressing youth homelessness and its prevention. The Safe in the City model is one that could be adapted to the Canadian context. Challenges to implementation of such a program include the difficulty of demonstrating that prevention works, the stigma of a "homelessness" label, and some youths' negative past experiences with services.

Prepared by Luba Serge. CMHC Project Officer: Anna Lenk. Ottawa: Canada Mortgage and Housing Corporation, 2005. (External Research Program Report) 52 pages (867 KB)

Note: No. 06-007 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65017)

STATUS : New Completed Report and Research Highlight

AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Transferability(w).pdf

See also: SUPPORTIVE HOUSING FOR HOMELESS AND HARD-TO-HOUSE- -SENIORS, p. 116

HOUSE CONSTRUCTION INDUSTRY

CLIENT PERFORMANCE PROGRAM: ACT PROJECT

This report, produced under the Affordability and Choice Today (ACT) Program, describes a Client Performance Management Program developed by the Markham Building Standards Department. The purpose of the Program is to record and weigh deficiencies in building permit applications, builder administrative compliance and construction. When a Markham building official encounters a deficiency in an application or a violation in the field, that deficiency is recorded and attributed to the responsible member of the client team. Ranking of builder performance is derived from the composite information and published. This information is helpful to prospective purchasers and its publication induces the ambition among lower performing builders to improve their standing. In this way, higher levels of compliance are achieved without adding resources to the enforcement program. Higher levels of compliance lead to higher builder profit promoting more competitive housing costs.

The project team to produce the Client Performance Management Program consisted of Building Department managers representing plan review and inspection. High performing client builders were consulted and their input helped identify meaningful measures. Data management dictated the involvement of corporate and private sector IT consultants. The project involved the following main steps:

- Identification of standard deficiencies associated with several activities;
- Testing and procurement of mobile computers to enable field data collection;
- Software modifications designed and implemented; and
- Data analysis and data publication.

Prepared by Markham Building Standards Department. Markham, Ont.: The Department, 2005. 43 pages

STATUS : New Completed Report

AVAILABILITY : *On a loan basis from Canadian Housing Information Centre*

GUIDE TO INSURANCE FOR NEW HOME BUILDERS AND RENOVATORS

This guide has been prepared to provide new home builders and renovators with information about insurance and to assist them in making effective and knowledgeable decisions about purchasing insurance coverage. The guide is based on a report, "Variability in Construction Insurance and Alternative Solutions", prepared in 2004 by Marsh Canada Limited. It offers a comprehensive look at the risks in the construction industry and traditional and non-traditional means of insurance protection.

Ottawa: Canada Mortgage and Housing Corporation, c2006. 51 pages

Order number: 64987 **Price: $9.95 + GST and shipping charges

Note: Disponible aussi en français sous le titre : Guide des assurances à l'intention des constructeurs d'habitations et des rénovateurs

STATUS : Completed Report
AVAILABILITY : CMHC Information Products

REGULATIONS IN THE RESIDENTIAL CONSTRUCTION INDUSTRY IN QUEBEC AND THEIR EFFECTS ON THE COST OF RENTAL HOUSING

This research will assess the impact of the variety of regulations affecting residential construction in Quebec on the cost of rental housing. The author will conduct a literature search of residential building regulations and interview experts in the housing industry, including building officials in the Ville de Québec, representatives of the Commission de la construction du Québec (CCQ), l'Association de la Construction du Québec (ACQ), the Corporation des entrepreneurs généraux du Québec (CEGQ), and several residential builders. The researcher will estimate the costs of residential construction attributed to these regulations, and their effects on housing rents. A report will be available in December 2007.

CMHC Project Officer : *Barry Craig*
CIDN : 28920202
Division : External Research Program
STATUS : Ongoing
AVAILABILITY : Product is not yet available
NEW

HOUSING

CRESCENT VALLEY NEIGHBOURHOOD PLANNING

The objective of this project is to undertake a face-to-face survey interview of residents of the Crescent Valley Housing Program in Saint John, NB, using a tool developed specifically for the neighbourhood and with resident input.

CMHC Project Officer : *Mark Holzman*
CIDN : 34180200
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available
NEW

HOUSING

EXAMINATION OF THE BOUNDARIES BETWEEN HOUSING AND INCOME SECURITY POLICY

The result of this study will increase awareness of the importance of housing in respect to broader social policy and income support policy in particular. This will contribute to the work of the Federal-Provincial-Territorial working group on affordable market housing, and potentially to other exercises such as the development of a market basket for measuring poverty and the design of future income support policy (e.g. National Child Benefit). This study will compare the housing and income support systems in four countries (Canada, United States, United Kingdom and Australia). It will focus on the structure of housing.

CMHC Project Officer : *Brian Davidson* ***CIDN*** : 30140200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

INDIVIDUALIZATION OF BEHAVIOURS AND LIVING OPTIONS

The research project will achieve the following objectives:

- Enhance the knowledge of one-person households, by developing socio-economic profiles of one-person households in the Montreal CMA.
- Determine, through a comparative analysis with Toronto and Vancouver, if the predominance of households of this type in Montreal results from a cultural phenomenon or a market structure specific to the Montreal area.
- Identify, by means of a telephone survey, the housing needs of one-person households.
- Indicate, on the basis of different one-person predominant household profiles, the major residential paths that could arise in the future.

CMHC Project Officer : *Jim Zamprelli* ***CIDN*** : 28370206
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

HOUSING AFFORDABILITY

ANALYSIS OF HOUSING AFFORDABILITY, 1971-2001

This project will examine trends in housing affordability for owners and renters over the period 1971 – 2001 using micro data files from the Census of Canada and Statistics Canada household surveys.

CMHC Project Officer : *Jeremiah Prentice* ***CIDN*** : 34380202
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available ***NEW***

DISTRICT OF HOPE, BC NEW HOUSING STRATEGIES: CREATING POLICY AND STREAMLINING BYLAW, BUILDING BLOCKS FOR HOPE'S SUSTAINABLE COMMUNITY: ACT PROJECT FINAL REPORT

This report, produced under the Affordability and Choice Today (ACT) Program, outlines the results of a project to develop planning and design alternatives for affordable market and alternative housing in the District of Hope. The report details the project goals and objectives, factors shaping the housing market, case studies of innovative housing choices, and describes the process taken to develop a housing strategy.

The process and the results of this study are intended to set the seeds for a new Hope housing strategy that combines affordability strategies with housing design and policy innovations. This vision integrates a supportive and proactive housing development environment created by the District of Hope with the initiative of the private sector and other community partners. Additional provincial and federal partners will play a role as support programs become available.

Prepared by District of Hope, MVH Urban Planning and Design, Inc. Hope, B.C.: District of Hope, 2005. 56 pages

STATUS : New Completed Report

AVAILABILITY : On a loan basis only from the Canadian Housing Information Centre

GAINING COMMUNITY ACCEPTANCE: CASE STUDIES IN AFFORDABLE HOUSING

This project developed case studies from across Canada, but excluding Ontario, where "not-in-my-backyard" (NIMBY) issues have resulted in significant opposition to affordable housing projects.

For this study, NIMBY is defined as "the protectionist attitudes and exclusionary/oppositional tactics adopted by community groups facing an unwelcome development in their neighbourhood." (Wolch, J. and M. Dear (1993). Malign Neglect: Homelessness In An American City. (Jossey-Bass Publishers: San Francisco)

The consulting team reviewed long-term housing facilities, transition houses, apartment-style housing, fixed rent and independent living facility projects. The review covered a broad demographic spectrum, including people with disabilities, seniors, women, youth, people with mental health issues and people with addiction issues. This report will provide municipalities, housing providers, social service agencies and related affordable housing service providers with best practices to gain community acceptance of their projects and overcome the Not In My Back Yard (NIMBY) syndrome. The case studies provide examples of how community acceptance related to affordable housing was, and can be, obtained.

Prepared by CS/RESORS Consulting Ltd. CMHC Project officer: Denis Losier. Ottawa: Canada Mortgage and Housing Corporation, 2006. 59 pages (1825 KB)

Note: No. 06-016 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65185)

STATUS : Completed Report and Research Highlight

AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Gaining_Apr24(w).pdf

GREEN PHOENIX INTEGRATED DESIGN CHARRETTE REPORT. PARKDALE UNITED CHURCH FOUNDATION; PARKDALE LIBERTY ECONOMIC DEVELOPMENT CORPORATION

On January 27-29, 2005, Parkdale Liberty Economic Development Corporation (PLEDC) organized and held a 2½ day Design Charrette for a sustainable, affordable housing project. Canada Mortgage and Housing Corporation (CMHC), the City of Toronto's Energy Efficiency Office, Natural Resources Canada and Sustainable Buildings Canada (SBC) provided organizational assistance for the charrette. CMHC, the City of Toronto, Enbridge Gas Distribution and Natural Resources Canada provided financial assistance. Human Resources and Skills Development Canada supported the wages of PLEDC staff who managed logistics for the charrette.

The goal of the charrette was to produce designs to add 20-21 new, green, affordable rental units to a site that already supports two existing buildings, at the corner of King Street and Dunn Avenue in the west end of Toronto. The largest building on the site is the 11-storey Phoenix Place, which provides bachelor apartments for low-income people. The building also houses the sanctuary for the Parkdale United Church, as well as church offices and facilities. Shalom House, next door to Phoenix Place, is a century-old house that was purchased by the church in the 1970's, serves as office and meeting space for community and faith-based organizations and houses a food bank.

The Charrette attracted more than 40 participants, including architects, engineers, planners, housing workers, building operators, community and church representatives and a variety of green technology specialists. This Design Charrette was organized as the first stage of an "integrated design process" (IDP) to create more environmentally friendly and energy efficient designs for the new apartments.

This report outlines the goals of the Green Phoenix Project, describes the buildings and the organizations involved, provides information on how the charrette was organized and planned, and details the goals of the charrette, the design team discussions and their results.

Prepared by Tom Ponessa, Jennifer Penney, Brian Fountain. Ottawa: Canada Mortgage and Housing Corporation, 2005.

Note: No. 06-101 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order no. 64934)

STATUS : Completed Report and Research Highlight

AVAILABILITY : Report on a loan basis from the Canadian Housing Information Centre; Highlight on the CMHC web site

GROWTH MANAGEMENT AND AFFORDABLE HOUSING: EXPLORING THE LINKS IN THE CASE OF GREATER TORONTO

This research will explore 3 hypotheses and address 4 principle questions. The hypotheses to be explored are:

1) Housing stock characteristics are large contributors to emerging Greater Toronto Area patterns of poverty in inner suburbs and lack of social mix in outer suburbs.
2) These patterns are distinctly different from the Greater Toronto Area a generation ago and are becoming similar to those in comparable city-regions.
3) Other cities' efforts to address such issues through growth management point to making affordable housing a part of regional growth management in Toronto.

Research questions to be explored are:

1)To what extent in Greater Toronto are the two trends of lack of income and housing diversity and concentration of lower-income households in inner older suburbs a) occurring in ways different from a generation ago; b) associated with housing stock trends; and c) related to each other?

2) What are the main causes and implications of such patterns in Toronto and other comparable cities in key dimensions such as income, migration, housing production and neighbourhood change?
3) What are the salient concepts, experience and lessons from the U.S. and other research on growth management vis-a vis these trends and challenges and affordable housing?
4) What does all this imply for the need, the potential and the limitations for affordable housing as an aspect of regional growth management for Greater Toronto?

CMHC Project Officer : *Douglas B Pollard*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 28920217
STATUS : Ongoing

HOUSING ALLOWANCE OPTIONS FOR CANADA: FINAL REPORT

Housing assistance in Canada generally consists of subsidies designed to encourage the construction of new, affordable housing. There is interest however, in complementing supply-side subsidies with assistance in the form of a housing allowance for certain households. This research report describes various options for a Canadian housing allowance program, and discusses how to best design, implement and operate such a program. The report is designed as a potential aid for policy makers considering the use of housing allowances.

Prepared by Meryl Finkel, Carissa Climaco, Jill Khadduri, Marion Steele, Abt Associates Inc. CMHC Project Officer: Steven Ehrlich. Ottawa: Canada Mortgage and Housing Corporation, 2006. (Housing Affordability and Finance Series) 150 pages (723 KB)

Order number 65098

Note: No. 06-011 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65086)

Nota: Disponible en français sous le titre : Options en matière d'allocation-logement au Canada

STATUS : New Completed Report and Research Highlight
AVAILABILITY : CMHC Information Products and
http://www.cmhc-schl.gc.ca/odpub/pdf/65098.pdf

NATIONAL HOME$AVE DEMONSTRATION PROPOSAL

The objective is to undertake consultations and research that will ensure that there is an appropriate testing environment created to determine the effectiveness of utilizing the concept of Individual Development Accounts (IDAs) for increased access to affordable homeownership for low-income working Canadians. It will develop the necessary components, including potential partners, management information system requirements and costs, project protocols and funding strategies, for a Pan-Canadian demonstration of IDAs for affordable homeownership.

CMHC Project Officer : *Eric Tsang*
Division : Policy and Research Division
AVAILABILITY : Product is not yet **available**

CIDN : 29240200
STATUS : Ongoing
NEW

PROFILE OF ROOMING HOUSE RESIDENTS

Rooming houses, one of the most inexpensive types of housing in most cities, play an important role in addressing the housing needs of very low-income single people. This study had three main objectives:

1. To create a profile of rooming house residents in three cities (Vancouver, Ottawa and Montreal);
2. To assess residents' views about the affordability and quality of rooming houses; and
3. To determine whether residents consider rooming houses as temporary or permanent housing.

Prepared by Christine Davis (Social Data Research Ltd.); L. Bonnie Dinning; Nick Istvanffy and Margaret Condon (Social Planning and Research Council of B.C.); Luba Serge; Laura C. Johnson (Laura C. Johnson Associates Inc.) CMHC Project Officer: Anna Lenk. Ottawa: Canada Mortgage and Housing Corporation, 2006. 190 pages (1597 KB)

Note: No. 06-019 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65235)

STATUS : New Completed Report and Research Highlight

AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/profile_of_rooming(w)_sept15.pdf

RECYCLING CATHOLIC CONVENTS AND RELIGIOUS INSTITUTIONAL BUILDINGS INTO AFFORDABLE AND ALTERNATIVE HOUSING: THREE CASE STUDIES

This project under the External Research Program will examine the recycling of religious institutional buildings in Quebec City into housing. An inventory of buildings that have been converted will be prepared and three case studies will be analyzed. Interviews will be conducted with the architects, municipal planners, occupants of the buildings and members of the religious order to assess the success of the housing project. Recommendations will be provided for future conversions of similar buildings. A draft report has been received and reviewed and the final report is being prepared.

CMHC Project Officer : *Susan Fisher*

Division : External Research Program

AVAILABILITY : Product is not yet available

CIDN : 26470205

STATUS : Ongoing

HOUSING AND IMMIGRATION

BEST PRACTICES IN DEVELOPING CULTURALLY APPROPRIATE SUPPORTIVE HOUSING MODELS FOR PREVENTION AND TREATMENT OF MENTAL HEALTH / SUBSTANCE USE PROBLEMS

The goal of this project is to identify evidence-based best practices in developing culturally appropriate supportive housing models for persons from ethnoracial / ethnocultural communities with mental health and/or addiction issues and produce a housing development manual that can be used by groups wishing to develop supportive housing for these communities. This will be accomplished by conducting a literature review, reviewing existing housing models and consulting with various stakeholders in Toronto (consumers, families, funders, housing and service organizations) to identify critical issues that must be considered in designing and developing appropriate housing for the target group.

CMHC Project Officer : *Jim Zamprelli*

Division : Policy and Research Division

AVAILABILITY : Product is not yet available

CIDN : 32890200

STATUS : Ongoing

EXPANDING HOUSING CHOICES FOR NEW CANADIANS

This project will gather and present detailed information for immigrants, and those assisting their settlement in Canada, on housing availability and housing costs for the cities of Vancouver, Toronto and Montreal, as well as a few other smaller municipalities. Since housing availability and costs vary considerably among Canadian municipalities, the guide will also provide some general, basic information regarding housing cost for a broader list of municipalities. The goal is to help immigrants choose alternatives other than settling in the larger cities, help them find housing in municipalities with lower housing costs, and help smaller municipalities attract immigrants to settle within their communities by showcasing their assets and their strengths, and support community development.

CMHC Project Officer : *Judith L Binder*

Division : Policy and Research Division

AVAILABILITY : Product is not yet available

CIDN : 32900200

STATUS : Ongoing

THE HOUSING SITUATION AND NEEDS OF RECENT IMMIGRANTS IN THE TORONTO CMA

This research report examines in detail the housing situation and needs of immigrants in the Toronto Census Metropolitan Area (CMA) in 2001. The authors examine the history of immigration in the Toronto area and recent trends in the Toronto housing market to understand the social and housing circumstances that immigrants encountered in Toronto upon arrival. The housing conditions of immigrants living in the CMA in 2001 are reviewed before the incomes and social characteristics of Toronto residents who are experiencing affordability problems are examined. The final section explores how very recently-arrived immigrants find housing and the extent to which their initial housing situations are affordable, adequate, and suitable.

Prepared by Valerie Preston, Robert Murdie, Ann Murnaghan, Department of Geography, York University. CMHC Project Officer: Jim Zamprelli. Ottawa: Canada Mortgage and Housing Corporation, 2006. 98 pages (1121 KB)

STATUS : New Completed Report

AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/CHIC_Housing(w).pdf

THE HOUSING SITUATION AND NEEDS OF RECENT IMMIGRANTS IN THE VANCOUVER CMA

This report provides a detailed analysis of the housing situation of immigrants in the Vancouver metropolitan area and complements similar reports on Montréal and Toronto. Drawing on a wealth of new information about the housing situation of immigrants, the authors examine four themes: the history of immigration in the Vancouver metropolitan area and recent trends in the Vancouver housing market; the housing conditions of immigrants currently living in the metropolitan area, focusing on the intersections between immigration, income, and ethno-cultural origin in the housing market; a detailed analysis of Vancouver residents who are experiencing affordability problems; and the housing circumstances of newcomers six months after landing in Canada, based on the Longitudinal Survey of Immigrants to Canada (LSIC). In the last of these themes the authors make direct links between immigrant admissions policy and outcomes in the housing market, since LSIC, in contrast to the census, includes information about the class of entry of immigrants.

Prepared by Daniel Hiebert, Pablo Mendez, Elvin Wyly, Department of Geography, University of British Columbia. CMHC Project Officer: Jim Zamprelli. Ottawa: Canada Mortgage and Housing Corporation, 2006. 101 pages (1309 KB)

STATUS : New Completed Report
AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Housing%20situation%20v.5(w).pdf

IMMIGRANTS AND HOUSING: A REVIEW OF CANADIAN LITERATURE FROM 1990 TO 2005

Despite the importance of immigrant access to acceptable housing and increased interest in this research area during the past decade there are few bibliographies of related Canadian literature. Two notable exceptions include an annotated bibliography from the Institute of Urban Studies, University of Winnipeg (Beavis, 1995) and the Housing New Canadians Research Working Group bibliography (2000) (www.hnc.utoronto.ca). While useful, neither of these is complete, and the Beavis bibliography is out of print. Therefore, there is need for an updated literature review and annotated bibliography in this important and rapidly emerging field of study.

This literature review was constructed in several stages. The search for sources concentrated on items that appeared between 1990 and 2005 and on literature about Canadian housing markets. Material concerning housing demand, housing careers, homeownership, and barriers in the housing market were sought.

Appendix A of this literature review, which lists 106 items, is derived from the search for a variety of relevant sources. Abstracts are provided where available. Web addresses are also given for material that is publicly available on the Internet. About one-third of the sources originates from government reports, of which half were initiated by CMHC. Twenty-five percent were found in journal articles, seventeen percent in student theses, and twelve percent in reports from NGOs. The remainder were from research institutes, book chapters and conference papers. Often material from a government report or student thesis is subsequently revised and published in a refereed journal. In several instances, both documents are included in the bibliography.

After compiling the bibliography, 56 items were selected for further consideration and more detailed summary. These are included in Appendix B. The primary criteria were relevance to the overall theme of immigration and housing, recency of material, and availability.

Prepared by Robert Murdie, Valerie Preston, Sutama Ghosh, Magali Chevalier, Department of Geography, York University. CMHC Project Officer: Jim Zamprelli. Ottawa: Canada Mortgage and Housing Corporation, 2006. 189 pages (933 KB)

STATUS : New Completed Report
AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/CHIC-Immigrants(w).pdf

HOUSING AND IMMIGRATION

LONGITUDINAL SURVEY OF IMMIGRANTS TO CANADA (LSIC) - DATA ANALYSIS OF HOUSING-RELATED INFORMATION

This project is a continuation of CMHC efforts to investigate the role of housing and communities as an integrative tool for newcomers, their effects on the housing market, and barriers to their accessing adequate shelter. Research and analysis of the 2001 Census and data from the Longitudinal Survey of Immigrants to Canada will focus on housing needs and preferences, housing conditions, living arrangements, household formation, and housing experiences and histories of newcomers as they evolve towards achieving the goal of integration. Barriers, obstacles and success in the housing market will be examined. This project is a co-venture between CMHC, three Metropolis Centres of Excellence and the National Secretariat on Homelessness.

CMHC Project Officer : *Jim Zamprelli* ***CIDN*** : 31920200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

METROPOLIS - CENTRES OF EXCELLENCE FOR RESEARCH ON IMMIGRATION ISSUES

CMHC and other federal departments provide ongoing financial support to stimulate and support policy-relevant research on immigration issues through a network of research centres in Canadian universities (Centres of Excellence). The results of the research will be used for the assessment of and development of policies and programs affecting immigrants and new Canadians. Metropolis carries out research in such areas as:

1. the effect of immigration on housing markets, demand and supply;
2. the effect of immigration on urban development, including issues of renewal of the urban core;
3. the impact of immigration on housing need, affordability, homelessness and the demand for social housing;
4. the social and spatial mobility of immigrants as compared with the profiles of the Canadian-born;
5. the relationship between immigration and the formation of ethnic, cultural or religious enclaves; the dynamics of enclaves - their role in integration (bridging or isolating), their economic role, their effect on city life, on urban renewal, on public safety, and so forth;
6. the relationship between metropolitan infrastructure (the quantity, quality and distribution of housing and public space) and immigrant integration.

Information on Metropolis and on some 200 funded research projects can be found at www.canada.metropolis.net

CMHC Project Officer : *Jim Zamprelli* ***CIDN*** : 25640200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is available on the web

HOUSING EXPORT OPPORTUNITIES

ASSESSMENT OF BRANDING AND CERTIFICATION PROCEDURES IN FRANCE

The study will produce an action plan for the recognition of Canadian construction technology in order to facilitate market access and exports of Canadian construction systems and products. This study will serve as a basis for discussions with Canadian partners in view of developing a shared vision and a strategy for the approval and promotion of Canadian technology and products in France. The study will not be made public until the discussions with the partners have been completed.

CMHC Project Officer : *Guy Lemieux*
Division : CMHC International
AVAILABILITY : Product is not yet available

CIDN : 33440900
STATUS : Ongoing

BEST PRACTICE GUIDE FOR HOUSING EXPORTERS TO THE UNITED KINGDOM

This research project will produce a document to assist Canadian exporters of houses to the United Kingdom. It will explain legal issues, project process and management practices, and service expectations. A glossary will be included of common UK and Canadian building terms.

CMHC Project Officer : *Louis Musto*
Division : CMHC International
AVAILABILITY : Product is not yet available

CIDN : 33390900
STATUS : Ongoing

CANADIAN SUSTAINABLE COMMUNITY MASTER PLAN -- NAN HUI DISTRICT OF PUDONG, CHINA

This report presents the results of a project commissioned by Canada Mortgage and Housing Corporation (CMHC) in January 2004, in joint venture with a large Chinese developer, China Enterprise (CE), to provide a Canadian designed Master Plan for a sustainable community to be developed by CE in the Nan Hui District of Pudong, an extensive area south of the Huang Pu River across from the main built-up metropolis of Shanghai.

CE was interested in developing a " Sustainable Community" to market a form of community development which could be promoted as providing the latest Canadian standards of liveability, sustainability, green technology, energy efficiency, and Healthy Housing. CMHC was interested in demonstrating how Canadian design expertise and building systems can contribute to the creation of sustainable communities and Healthy Housing in China. The design intent was to translate the latest and best Canadian community design practices into an appropriate local Chinese context. This community was to be a model for similar developments in China, particularly in the Pudong area, by demonstrating a desirable lifestyle focussed on sustainability, comfort, health, and relaxation in a natural setting. The community is designed to provide an excellent quality of life while respecting existing natural systems.

The Nan Hui Master Plan illustrates a distinctly Canadian sustainable design approach adapted to local Chinese conditions. The Master Plan creates a template for sustainable living, resource efficiency, a healthy lifestyle connected to nature, and low impact on the natural environment. The community includes a wide range of housing types, neighbourhood commercial space and amenity facilities. The landscape design has a dual function: it creates a convenient, attractive, and generously landscaped open space framework combined with an expanded canal system to provide welcoming spaces for relaxation, recreation, as well as a network of routes for walking and cycling, while also acting as a green infrastructure system.

Consultant Team: Ramsay Worden Architects, Prime Consultant; Bob Worden, Partner in Charge of Project; Peter Reese, Project Manager; Philips Farervaag Smallenberg Associated Firm – Landscape Architecture; PMC Associates Consultant; Archemy Consulting Ltd. Consultant; Consultant Architect - Shanghai Context: Dr. Chen Yi. CMHC Project Officer: Nellie Cheng. Ottawa: CMHC International, 2006. 98 pages

Disponible en français sous le titre : Plan directeur de la collectivité durable de type canadien - district de Nan Hui, à Pudong, Chine

STATUS : New Completed Report
AVAILABILITY :
http://www.cmhc-schl.gc.ca/en/hoficlincl/cmhcin/suexin/inma/upload/SustainableCommunities_English%20(WEB).pdf

CASE STUDIES ON WOOD-FRAME CONSTRUCTION IN RUSSIA

This project's objective is to carry out case studies on existing Canadian wood frame houses in the cities of Omsk, Sakhalin, Rostov and Moscow in Russia to identify possible performance problems in their design and/or construction. The study will evaluate Russia's recently adopted Building Code for Single Family Houses and identify differences between this code and Part 9 of the Canadian code. In addition, the project will assess the extent to which the new Russian Building Code and regulations are available, understood, and enforced.

CMHC Project Officer : *Anand Mishra*
CIDN : 30990900
Division : CMHC International
STATUS : Ongoing
AVAILABILITY : Product is not yet available

DEVELOPMENT OF CANADIAN LABELLING PROGRAM FOR CHILE

The Labelling program would provide foreign buyers with the assurance that the homes originated from Canada, were successfully certified, and were adequately installed on-site to ensure expected system performance. The program will also offer training and after sales service support. On the other hand, Canadian participant members would benefit from a differentiation from the local and foreign competitors, an increased credibility based on the compliance to an independent quality control process which maximizes Canadian housing recognition and reputation abroad, and a protected trade mark, etc.

CMHC Project Officer : *Guy Lemieux*
CIDN : 28860900
Division : CMHC International
STATUS : Ongoing
AVAILABILITY : Product is not yet available

DISTRIBUTION CHANNEL ANALYSIS FOR SELECTED U.S. MARKETS AND PRODUCTS

The purpose of this report is to provide exporters of Canadian building products with an understanding of how to market to the distribution channels supplying the following building products in the following U.S. regions and markets:

- Product categories: doors, windows, roofing, siding, cabinets, counter tops, architectural millwork, and flooring;
- Regions and markets: New England (Maine, Massachusetts, New Hampshire, Vermont, Rhode Island, Connecticut, and New York state excluding New York City), the suburbs of New York City (excluding the boroughs), the Baltimore-Washington, D.C. MSA, Colorado (Front Range corridor).

The study includes a comparative analysis of the focus markets listed above versus the U.S. as a whole, covering the following topics: trends and factors influencing single-family new home construction; trends and factors influencing remodelling activity; structure of the distribution channels serving home builders and remodelers; home builders' and remodelers' supply needs and purchasing patterns; and the nature of potential opportunities for Canadian exporters.

Prepared for CMHC International by The Building Supply Channel, Inc. CMHC Project Officer: Marie-Hélène Pastor. Ottawa: Canada Mortgage and Housing Corporation, 2006. 86 pages

Disponible en français sous le titre : Analyse des canaux de distribution de marchés et produits ciblés aux États-Unis

STATUS : New Completed Report
AVAILABILITY :
http://www.cmhc-schl.gc.ca/en/hoficlincl/cmhcin/suexin/inma/upload/US_Market_E_July5.pdf

EXPORTING TO RUSSIA: LESSONS LEARNED FROM THE CANADIAN HOUSING INDUSTRY PROJECT

The objectives of this project are:

- to identify needs, challenges, and opportunities in the Russian housing market.;
- to investigate the operational experience of Canadian housing exporters in Russia;
- to identify export barriers, business opportunities and the challenges facing Canadian housing exporters in Russia;
- to identify key success factors employed by Canadian housing exporters in Russia;
- to assess the comparability between the requirements of the Russian housing market and the capabilities of the Canadian housing industry; and
- to assess CMHC's past role in assisting the Canadian housing export industry to market effectively in Russia.

CMHC Project Officer : *Mietka Zieba*
CIDN : 28030900
Division : CMHC International
STATUS : Ongoing
AVAILABILITY : Product is not yet available

FRANCE 2005 BUILDING PRODUCTS REPORTS

The research obtained from the project will result in the development/production of "Fact Sheets" that give information on market conditions and regulatory issues on selected products that can be exported to the priority countries that CMHC International works with.

CMHC Project Officer : *Guy Lemieux*
CIDN : 33330900
Division : CMHC International
STATUS : Ongoing
AVAILABILITY : Product is not yet available

IDENTIFICATION AND DEVELOPMENT OF BUSINESS OPPORTUNITIES IN THE FRENCH MARKET: PREFABRICATED HOMES

The purpose of this project is to provide research on builders, developers and residential projects that could present business opportunities for Canadian manufacturers of prefabricated products. The results of the study will enable CMHC to better guide the industry toward the best business opportunities, in order to increase the Canadian presence on the French market. This document will be available on CMHC's web site. The project involves a second part that will be funded exclusively by Canadian companies interested in obtaining matchmaking services with French contractors.

CMHC Project Officer : *Guy Lemieux*
CIDN : 33430900
Division : CMHC International
STATUS : Ongoing
AVAILABILITY : Product is not yet available

IDENTIFICATION OF BUSINESS OPPORTUNITIES IN THE IRISH MARKET - 2005

The project will research opportunities in the Irish market for Canadian building product and system manufacturers by identifying builders, housing projects, and buyers of building products. Based on market research and interviews, profiles will be developed for these potential opportunities. A report on these opportunities will be produced for distribution by CMHC.

CMHC Project Officer : *Roger Leger*
CIDN : 33410900
Division : CMHC International
STATUS : Ongoing
AVAILABILITY : Product is not yet available

IDENTIFICATION OF BUSINESS OPPORTUNITIES IN THE U.K. MARKET - 2005

The project will research opportunities in the U.K. market for Canadian building product and system manufacturers by identifying builders, housing projects and buyers of building products. Based on market research and interviews, profiles will be developed for these potential opportunities. A report on these opportunities will be produced for distribution by CMHC.

CMHC Project Officer : *Eliska Jerzabek*
CIDN : 33400900
Division : CMHC International
STATUS : Ongoing
AVAILABILITY : Product is not yet available

JAPAN 2005 - FURTHER ANALYSIS ON BUSINESS OPPORTUNITIES IN THE SENIORS HOUSING MARKET IN THE TOKAI REGION

The purpose of this project is to develop a cost and life cycle analysis between a large scale wood frame panelized building and a traditionally built Japanese concrete large scale building.

CMHC Project Officer : *Laura Diakiw*
CIDN : 33530900
Division : CMHC International
STATUS : Ongoing
AVAILABILITY : Product is not yet available

MEXICO RESEARCH ON MARKET INTELLIGENCE AND OPPORTUNITIES FOR BUILDING PRODUCTS

The project will describe and assess the distribution channels in Mexico for selected building products and identify potential Mexican buyers. For each selected building product, a summary report on market opportunities and distribution channels, key contacts in the distribution channels and other contacts will be produced. The report is intended for Canadian building product manufacturers interested in the Mexican market.

CMHC Project Officer : *Paulina Barnes*
CIDN : 33460900
Division : CMHC International
STATUS : Ongoing
AVAILABILITY : Product is not yet available

RESEARCH ON CANADIAN GREEN BUILDING PRODUCT CAPABILITIES

This project will develop an inventory of Canadian green building products for promotion in the USA market.

CMHC Project Officer : *Louis Musto*
CIDN : 33920900
Division : CMHC International
STATUS : Ongoing
AVAILABILITY : Product is not yet available

RESEARCH ON MARKET OPPORTUNITIES IN CHINA

This project is to identify and develop business opportunities in China for Canadian building product exporters. The main objective of this project is to research opportunities and within this context identify Canadian building products that will have the highest possibility of export sales in China. The project will consist of identifying mid to high end construction projects in key Chinese markets. The consultant will find projects and introduce Canadian technology to the key contacts of these projects. The general mandate will be to:

- Provide project specific market intelligence;
- Identify business opportunities for Canadian housing system and product manufacturers;
- Facilitate export opportunities;
- Promote Canadian construction technology in the Chinese market;
- Raise awareness of Canadian construction technology.

A final report will be submitted to CMHC (in electronic format) that will include: the project details (type of project, project stage, type of building products needed, etc); key contact information for the project manager, specifier, architect and procurement officer; opportunities for Canadian exporters of building products and systems within the identified projects.

CMHC Project Officer : *Tulio Conejeros* — ***CIDN*** : 34740900
Division : CMHC International — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available — ***NEW***

ROADMAP TO PRODUCT APPROVALS IN RUSSIA

The study will address the following issues and information needs: the degree to which certification is mandatory, relationships between product certification and building products, alternate routes for local and national approvals, the respective roles of competing Russian agencies and jurisdictions, identification of key contacts within these agencies, the acceptability of Canadian standards and test data. For the specific product categories to be studied in detail, additional information will be collected on technical requirements, relevant Russian or international standards, etc.

CMHC Project Officer : *Mietka Zieba* — ***CIDN*** : 28880900
Division : CMHC International — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

STUDY ON DISTRIBUTION CHANNELS AND CONSTRUCTION PROJECTS IN MEXICO

This project will describe the distribution channels in Mexico for selected building products, and will identify market opportunities among high-end builders and construction projects.

CMHC Project Officer : Paulina Barnes — ***CIDN*** : 34720900
Division : CMHC International — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available — ***NEW***

STUDY TO IDENTIFY THE CHANGES HAPPENING TO THE JAPANESE BUILDING REGULATIONS AND THEIR IMPACT ON CANADIAN INDUSTRY ACTIVE IN JAPAN

A document will be produced in English to be distributed to Canadian housing suppliers of products and systems. The document will outline a path by which the Canadian housing industry can follow to meet current changes happening in the regulatory environment which will assist sustaining and expanding market share. The document will provide an overview of legislation and regulations that guide the building industry in Japan; describe type approvals and product specific approvals and what they mean and in which cases they can be used; describe the various testing and approval facilities, etc.

CMHC Project Officer : *Laura Diakiw*
Division : CMHC International
AVAILABILITY : Product is not yet available

CIDN : 27380906
STATUS : Ongoing

SUPPORT TO PREFAB AND ENGINEERED WOOD INDUSTRY

CMHC wishes to offer business opportunities to Canadian exporters of prefab houses, multi-family projects and value-added components, including advice on distribution networks. To attain its objectives, CMHC must conduct research with the assistance of an American consultant specializing in this area. The main goal of this study is to contribute to increasing Canadian exports of residential construction products by identifying the best business opportunities, while emphasizing the competitive benefits of the products.

CMHC Project Officer : *Guy Lemieux*
Division : CMHC International
AVAILABILITY : Product is not yet available

CIDN : 31240900
STATUS : Ongoing

2006 MARKET RESEARCH ON HARDWOOD FLOORING AND LAMINATED FLOORING (ENGINEERED)

CMHC International wishes to undertake a program to support Canadian manufacturers of hardwood flooring in developing and expanding their exports into the U.K. market. Hardwood flooring is one of three building components eligible for designation in that market as Super E Ready.

CMHC Project Officer : *Craig J Angus*
Division : CMHC International
AVAILABILITY : Product is not yet available

CIDN : 34260900
STATUS : Ongoing

HOUSING EXPORT OPPORTUNITIES

U.S. FEDERAL TAX CREDITS FOR NEW AND EXISTING HOMES: AN ASSESSMENT OF OPPORTUNITIES FOR CANADIAN EXPORTERS

The U.S. Congress passed legislation in 2005 allowing for home builders to take a $2,000 tax credit for each house they produce that meets or exceeds a threshold of 50 per cent more energy efficient than the 2004 International Energy Conservation Code and its supplements for the tax years of 2006 and 2007. The 50 per cent compliance threshold applies only to heating and cooling costs. In addition, homeowners may take up to $500 in tax credits for purchases of certain energy-efficiency improvements to their homes in these years. CMHC International commissioned a study of the potential market opportunity for Canadian product manufacturers in the U.S. The findings indicate that, while the improvements are not common practice in most parts of the U.S., qualifying for the tax credits may not represent a significant change for many builders. Using compliance software that is certified by the Residential Energy Services Network will enable builders to determine what they need to qualify for these tax credits. Initially, the U.S. Treasury estimated that only 14,000 or about one per cent of new, single-family houses would achieve compliance each year. Analysis by the proponents of the two leading compliance software tools suggests that builders can achieve compliance in every climate zone leading to the conclusion that the Treasury Department estimate may be significantly understated. Therefore, the market opportunity for Canadian producers could be quite large.

Prepared for CMHC International by MarketEdge Consulting, Inc. Ottawa: Canada Mortgage and Housing Corporation, 2006. 41 pages

Disponible en français sous le titre : Crédits d'impôts fédéraux des États-Unis pour maisons neuves et existantes : Évaluation des possibilités pour les exportateurs canadiens

STATUS : New Completed Report

AVAILABILITY :
http://www.cmhc-schl.gc.ca/en/hoficlincl/cmhcin/suexin/inma/upload/Federal_EN_June15_06.pdf

HOUSING FINANCE

PRE-ARRANGED FINANCING FOR NEW HOME BUYERS

This project will document and discuss the policies and practices associated with prearranged mortgage financing arrangements made available to new home buyers through their home builder. This will lead to a better understanding of the role of prearranged financing in the business model of Canadian home builders and how it may contribute to access to homeownership. Specifically, this research will explore and document the terms and conditions of prearranged financing and explain how they have evolved over the last decade. It will document who are the providers of prearranged financing including both institutional and non-institutional mortgage players and explain their respective roles and any changes over time. As well, it will investigate the impact of prearranged financing on access to homeownership and provide a prognosis for the future of this type of product. This study will raise awareness about prearranged financing options available for Canadian home builders.

CMHC Project Officer : *Steven Ehrlich*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 31580200
STATUS : Ongoing

ROLE OF REINSURANCE IN HOUSING FINANCE

The objective of this project is to understand the potential role of mortgage loan reinsurance in promoting housing affordability and choice, facilitating access to and competition and efficiency in the provision of housing finance, and in protecting the availability of adequate funding for housing at low cost. This project will analyze the economics and applications of mortgage reinsurance, including trends and developments. It will also examine alternative risk transfer mechanisms that compete with reinsurance or complement it. This project will specifically develop an understanding of the mechanics of captive mortgage insurance practiced in the United States by looking at the regulatory issues that affect captive mortgage insurance; the affect on mortgage borrowers, lenders, and mortgage insurers; the extent to which U.S. mortgage insurers have exported the captive mortgage reinsurance model to foreign markets; and, understand regulatory issues and other factors that may hamper or facilitate the use of captive mortgage reinsurance in Canada.

CMHC Project Officer : *Bruno Duhamel*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 35100200
STATUS : Ongoing
NEW

STABILITY VERSUS FLEXIBILITY IN THE CANADIAN MORTGAGE INSURANCE SYSTEM

This research will investigate what is the optimal trade-off between stability, transparency; and simplicity and flexibility and product choice. The work will compare the Canadian mortgage system with analogous arrangements around the world. Finally the research will look into alternative mechanisms that enhance flexibility and product choice without compromising its current stability and transparency.

CMHC Project Officer : *Bruno Duhamel*
Division : External Research Program
AVAILABILITY : Product is not yet available
CIDN : 34380219
STATUS : Ongoing
NEW

UPDATE 2002 LEVIES, FEES, CHARGES AND TAXES ON NEW HOUSING

This project will update and expand the contents of the 2002 study, "Levies, Fees, Charges and Taxes on New Housing." The project will review and critique the methodologies employed in earlier studies to estimate government-imposed costs on new homeownership and rental dwellings, with a view to recommending an improved methodology. It will then document and quantify the separate and cumulative impact of government-imposed costs on new homeownership and rental dwellings in Canada. Finally, it will analyse the changes in government-imposed costs and identify how these costs have trended over time. The final report, expected in February 2007, will be of interest to home builders and developers as well as municipal and provincial housing officials.

CMHC Project Officer : *Steven Ehrlich*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 34040200
STATUS : Ongoing

HOUSING FORECASTING AND DEMAND

COHORT ANALYSIS OF CANADIAN HOUSING TRENDS

This External Research Project will use cohort data to explore the housing careers of Canadians living in all regions of the country and born between 1905 and 1974. The objectives of the work are to examine how the housing careers of birth cohorts differ from that which might be deduced from cross-sectional data, to identify differences among cohorts, and to relate the housing careers of cohorts to the socio-economic conditions they have experienced. The analysis should provide insights into the viability of forecasting future behaviour of households using different types of data; for example, it could be that cohort data will suggest different implications for housing choices in the future than cross-sectional data.

CMHC Project Officer *: Roger D Lewis* — ***CIDN*** : N/A

Division : External Research Program — ***STATUS*** : Ongoing

AVAILABILITY : Product is not yet available

HOUSING INDICATORS AND DATA

IMPACT OF BUSINESS CYCLES ON CORE HOUSING NEED

This project will provide policy makers and researchers with an understanding of the impact of various changes in economic conditions on housing need. This project will also help policy makers understand the potential cyclical aspects of housing need, and understand, for example, how policy responses to an increase in housing need caused by a temporary surge in unemployment is different from an increase in housing need caused by persistent increases in housing and related costs, such as interest rates, utility rates and property taxes. This project will therefore decompose changes in housing need into portions attributable to cyclical factors and those attributable to structural considerations.

CMHC Project Officer *: Bruno Duhamel* — ***CIDN*** : 35010200

Division : Policy and Research Division — ***STATUS*** : Ongoing

AVAILABILITY : Product is not yet available — ***NEW***

HOUSING MARKET

THE IMPACT OF THE 2010 OLYMPICS ON THE VANCOUVER AND SEA-TO-SKY HOUSING MARKETS

The 2010 Winter Olympics and Paralympics (the Games) will take place in Vancouver and Whistler, British Columbia and potential impacts will reflect on the entire Southwest Metropolitan region of the province. The purpose of this research is to estimate the impact of the 2010 Games on the region and its sub-regional housing markets.

The research entails three components:
- a literature review;
- a review of the housing market; and
- forecasts of population, housing and employment for the region between 2001 and 2031.

The literature review recounts various host cities' experiences with mega events, such as the Olympic Games, specifically the impact on their economies and housing markets. The review relates these experiences to the potential implications of the 2010 Olympic Games on the economy and housing markets of communities in the host region.

HOUSING MARKET

The second component, the housing market review, comprises a series of reports on housing markets in Vancouver and the Sea-to-Sky corridor (including the municipalities of Squamish, Whistler, Pemberton and Lillooet). These reports present current and historical information related to population and residential real estate. They also include a discussion of non-market housing components, and identify population groups that may be impacted by the Games.

Building on the first two components, the projections provide estimates of the potential impact of the Games on regional housing markets. This required projections of housing market conditions under two scenarios— one that included hosting the Games and one that did not. The "no Games" scenario was constructed by extending pre-2002 demographic and economic trends for the region into the future, while the "Games" scenario built on federal and provincial data on the economic impacts of hosting the Games.

Prepared by City Spaces Consulting Ltd. and Urban Futures Inc. CMHC Project Officer: Carol Frketich. *Ottawa: Canada Mortgage and Housing Corporation, 2006. 301 pages (10012 KB)*

Note: No. 06-022 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65293)

STATUS : New Completed Report and Research Highlight

AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/impact_2010_report(W).pdf

STRUCTURAL ANALYSIS OF THE MONTRÉAL REAL ESTATE MARKET

The primary objective of this project has been to analyze the structure of the Montreal real estate market to determine if Montreal has undergone any structural changes by identifying the indicators of these changes. The analysis has been done, in part, in the light of the situation in other Canadian markets. This research also includes a structural analysis of the markets in all metropolitan areas across Quebec. The study examines the scope of the changes and the reasons for the changes.

CMHC Project Officer : *Bruno Duhamel* — ***CIDN*** : 28770200

Division : Policy and Research Division — ***STATUS*** : Ongoing

AVAILABILITY : Product is not yet available

HOUSING RESEARCH

HERITAGE CONSERVATION METHODOLOGY FOR THE SUSTAINABLE REHABILITATION OF CHINATOWN'S SOCIETY BUILDINGS INTO HOUSING

This External Research Project aims to establish a methodology for the culturally and environmentally sustainable rehabilitation of 'Society Buildings' in Vancouver's Chinatown. It will establish strategies for how Chinatown can protect its heritage and redevelop into a sustainable, culturally rich community that balances the need for housing with historic preservation. The work will build on the research of the City of Vancouver's 'Historic Study of the Society Buildings in Chinatown' that documents the unique social histories of this building form. Prototypical housing strategies will be developed for the conversion of 5 of the Society Buildings into market housing.

CMHC Project Officer : *Brian Eames* — ***CIDN*** : 28920213

Division : External Research Program — ***STATUS*** : Ongoing

AVAILABILITY : Product is not yet available

HOUSING RESEARCH

HOUSING ISSUES OF SEASONAL WORKERS IN CANADA

This study will use existing data and interviews with Sector Council officials to create a baseline of the nature and magnitude of the housing issues faced by seasonal workers across Canada. This work will document the characteristics of jobs in seasonal industries and document the demographics of seasonal workers themselves. While maintaining a national perspective, the study will yet focus on regions where seasonal work is most prevalent. Finally, measures currently used by employers and/or employees in seasonal industries to address any housing issues faced by seasonal workers will be documented.

CMHC Project Officer : *Bruno Duhamel*
CIDN : 33950200
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

OVERVIEW OF THE CURRENT STATE OF KNOWLEDGE ON THE NATURE AND EXTENT OF BROADER (NON-HOUSING) SOCIETAL OUTCOMES OF HOUSING

This research will provide an overview of the current state of knowledge on the nature and extent of broader (non-housing) societal outcomes of housing related to education, skills development and employment. It will review existing empirical evidence of the role of housing in contributing to broader societal outcomes, assess the current state of knowledge regarding linkages between housing and broader societal outcomes, identify data gaps, examine related methodological challenges and identify future research challenges and opportunities.

CMHC Project Officer : *Ed Nera*
CIDN : 34430200
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available
NEW

INFRASTRUCTURE

DEVELOPMENT OF COSTING MECHANISM(S) TO FACILITATE SUSTAINABLE COMMUNITY PLANNING

The purpose of the project is to develop a mechanism(s) that will allow community planners to effectively calculate and convey the full, accurate, long and short term public infrastructure costs of both conventional and more sustainable community planning scenarios. Phase 1 will identify relevant commercially available or partially developed infrastructure costing models and tools and community scenario building tools; identify current relevant sources of financial costing information related to the direct, indirect and external costs affected by development; document current costs for a full range of conventional and alternative infrastructure elements; identify the key costs affected by urban form and the factors that affect them most; apply the key costs to six development scenarios and develop cost/revenue statements for each scenario; construct a methodology to permit planners to effectively calculate and convey reliable net public cost projections for a full range of sustainable community planning scenarios; and if no tool currently exists, develop a framework for a methodology or tool by which the diverse sources and currently unrelated tools used above might be integrated into a single costing/scenario development exercise. Phase 2 of the project, which is currently undergoing internal testing has developed a costing scenario tool using the data collected in Phase 1. This user friendly costing mechanism will allow planners, politicians and other stakeholders to quickly compare and adjust the full, life cycle (75 year) costs of various planning scenarios during the community planning process.

CMHC Project Officer : *Douglas B Pollard*
CIDN : 26950200
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

INFRASTRUCTURE

USER PILOTING OF THE INFRASTRUCTURE COSTING MECHANISM

This project will consist of internal and external workshop sessions where tool development experts will work with selected community stakeholders to validate and refine the current "beta" version of the costing mechanism to facilitate sustainable community planning. These sessions will assess the accuracy and usability of this tool prior to its final release by CMHC. The sessions will allow individuals from CMHC Research as well as a range of Canadian regions and municipalities to test this new tool on known situations as well as their own planning scenarios and to compare results.

CMHC Project Officer : *Douglas B Pollard*	***CIDN*** : 32670200
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

LAND DEVELOPMENT

PROFILE OF THE LAND DEVELOPMENT INDUSTRY IN CANADA

The key objective of this study is to develop a profile of the land development industry in Canada. Critical to achieving this objective is gaining a clear understanding of what the land development industry is. To accomplish this, the research will be based on an examination of data from Statistics Canada and a review of existing literature. The literature review will serve to define land development, including its role in the national economy generally, and the residential construction industry in particular.

A nationwide industry survey will be a central element of the research. Interviews will be conducted in 16 major urban centres. Survey results will be used to identify drivers of change in the land development industry, such as environmental and public policy initiatives, and will also allow the analysis of how the industry has adapted and developed in response to these drivers. The results of the survey will also be used to identify challenges facing the land development industry over the next 10 years.

CMHC Project Officer : *Bruno Duhamel*	***CIDN*** : 32540200
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

PERSONS WITH DISABILITIES

FRAMEWORK FOR COST- BENEFIT ANALYSIS OF HASI AND RRAP-D: FINAL RESEARCH REPORT

The objective of this study was to develop a framework for the cost-benefit analysis of two programs of Canada Mortgage and Housing Corporation (CMHC), the Residential Rehabilitation Assistance Program for Persons with Disabilities (RRAP-D) and Home Adaptations for Seniors Independence Program (HASI). The framework includes all the effects of these programs on applicants, their caregivers and their community.

The study team developed a logic model for the two programs, and a quantitative model of potential impacts of the renovations over time. The team listed all of the costs and benefits that might potentially be relevant and discussed how each might be measured. It made recommendations about the general approach to a major study of the two programs and about various technical aspects of the cost-benefit analysis methodology. In particular, the report describes the use of "contingent valuation" by beneficiaries and the alternative approach which is to quantify and value changes in the quality of life of program beneficiaries and their caregivers.

The study was funded by CMHC and Health Canada.

Prepared by Dr. Kenneth Watson and Dr. Anne Perkins, Rideau Strategy Consultants Ltd. CMHC Project Manager: Luis Rodriguez. Ottawa: Canada Mortgage and Housing Corporation, 2005. 2 volumes

Note: No. 05-038 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 64944)

STATUS : Completed Report and Research Highlight

AVAILABILITY : Canadian Housing Information Centre and (volume 1: 5870 KB) ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/frameworkHASIvol1.pdf and (volume 2: 3155 KB) Ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/FrameworkHASIVol2(WEB).pdf

HOUSING FOR ADULTS WITH INTELLECTUAL DISABILITIES: FINAL REPORT

This study examined the housing issues that adults with intellectual disabilities and their families are facing. Conducted between December 2004 and February 2006, it addressed:

1. the availability of housing and associated support services;
2. best practices;
3. transitions between housing situations;
4. the role of parents of adults;
5. risks that face persons with intellectual disabilities as they transition out of the family home or the juvenile system; and
6. gaps in the availability of housing, both existing and anticipated.

The research focused on three cities: Victoria, Ottawa and Halifax, with some input from stakeholders in other provinces. While not national in scope, nor exhaustive in its methods, it provides an overview of the housing and support issues facing adults with intellectual disabilities.

Prepared by Beals, Lalonde & Associates Citizen Advocacy of Ottawa. CMHC Project Officer: Anna Lenk. Ottawa: Canada Mortgage and Housing Corporation, 2006. 91 pages (1281 KB)

Note: No. 06-008 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65011)

STATUS : Completed Report and Research Highlight

AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Gaining_Apr24(w).pdf

INTERIOR DESIGN STUDENT COMPETITION FOR FLEXHOUSING DEMONSTRATION FACILITY AT CCHT

This is a student interior design competition where students will create inexpensive interior design ideas for the demonstration FlexHouse at the Canadian Centre for Housing Technology (CCHT). The FlexHousing demonstration facility at CCHT will be renovated to incorporate the winning designs.

CMHC Project Officer : *Collinda Joseph*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 32910200
STATUS : Ongoing

LONGITUDINAL STUDY OF HOUSING FOR MENTAL HEALTH CONSUMER-SURVIVORS

This research project will compare the outcomes of two mental health housing programs, supportive housing and rent supplement, including tenants' satisfaction and preferences.

CMHC Project Officer : *Anna Lenk*	***CIDN*** : 34380213
Division : External Research Program	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	***NEW***

PROFILE OF HOUSING CONDITIONS OF PEOPLE WITH DISABILITIES - DATA ACQUISITION

This initial stage of the Project involves acquiring the data necessary for analysis. Statistics Canada PALS data will be linked to CMHC's 2001 Census-based indicators. CMHC has met with Statistics Canada to ensure that PALS data can be linked with the 2001 Census core housing need files. Development of data specifications and research issues will arise through consultation with stakeholders, both internal and external (Office for Disability Issues (ODI) with HRSDC as well as national disability organizations). The next stage of the project involves hiring a consultant to analyze the data, and this will occur as part of a separate Part IX project planned for the 2006 commitment year.

CMHC Project Officer : *Collinda Joseph*	***CIDN*** : 29550200
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

RENOVATION OF HOMES TO INCLUDE CEILING TRACK SYSTEM FOR PEOPLE WITH DISABILITIES

This project will determine best solutions to renovating homes to include a ceiling track system that allows a parent of a child or caretaker of an adult with a severe physical disability to move him/her from one room to another easily. Research will be conducted by visiting homes with this system in place, determine where difficulties exist and determining best solutions. This project will improve the renovations of homes using a ceiling track system used for the transfer from one room to another of children and adults with severe physical disabilities.

CMHC Project Officer : *Collinda Joseph*	***CIDN*** : 31950200
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

UPDATING AND ENHANCING CMHC PUBLICATIONS REGARDING CONSTRUCTION AND RENOVATION OF HOMES FOR PEOPLE WITH DISABILITIES

The objective of this project is to produce a number of publications in the CMHC About Your House (AYH) series for use by persons with disabilities, architects, occupational therapists, renovators, builders and the general public. Each will be based on information, to be updated, in the publication "Housing for Persons with Disabilities" and will take into account information contained in other FlexHousing™ and Health Housing™ publications. The titles for the AYH series include Exterior Areas, Interior Public Areas, Interior and Exterior Ramps, Kitchens, Bathrooms and Living Spaces, among others.

CMHC Project Officer : *Collinda Joseph*	***CIDN*** : 31960200
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

ACCESSORY APARTMENT REGULATIONS IN CENSUS METROPOLITAN AREAS IN CANADA = RÈGLEMENTS VISANT LES APPARTEMENTS ACCESSOIRES DANS LES RÉGIONS MÉTROPOLITAINES DE RECENSEMENT DU CANADA

Accessory apartments represent an affordable housing option and can be a positive component of residential intensification and sustainability. This study identified and documented zoning regulations and bylaws in municipalities within Canada's proposed and existing Census Metropolitan Areas (CMAs), and summarized their provisions for accessory apartments. Slightly more than half of all municipalities allow accessory apartments in some form, while 14 of the core cities in the 33 CMAs prohibit this type of use.

Prepared by Monika Ruffolo, Chris Down, and David Grondin under the direction of Catherine Marchand, Executive Director, Intergovernmental Committee on Urban and Regional Research. CMHC Project Manager, Brian Eames. Ottawa: Canada Mortgage and Housing Corporation, 2006. I volume in various pagings (1874 KB)

Note: No. 06-006 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65025)

STATUS : New Completed Report and Research Highlight

AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_bilingual/CHIC_Accessory_Apartment(w)_nov2.pdf

CEDAR VALLEY APPROVAL PROCESS REVIEW: FINAL REPORT

The District of Mission secured a federal funding grant through the Affordability and Choice Today (ACT) Program for a review of the approval process for land use applications in Cedar Valley. Cedar Valley was selected as a suitable area as it had undergone a comprehensive land use planning process, resulting in the Cedar Valley Comprehensive Development Plan. Ideally any process improvements could be considered, if appropriate, for incorporation in other areas in the municipality.

The objective of the review process was to identify and implement processes that could potentially reduce the amount of time, uncertainty and cost for developers to receive local government approvals. This would be achieved by engaging a consultant, utilizing the grant monies, to undertake the review. John Ellis and Associates was engaged to carry out the review. John Ellis worked with staff, external agencies, community representatives and the Development Process Advisory Committee in preparation of the report.

The report outlines the study design procedures, efficiency strategies, and Cedar Valley actions throughout the approval process review. A summary of the recommendations made and their implementation is included in the report.

Prepared by Jon Ellis & Associates, District of Mission, British Columbia. Unpublished Manuscript. 2005. 68 pages

STATUS : New Completed Report

AVAILABILITY : Report is available on a loan basis from Canadian Housing Information Centre

REGULATORY REFORM

INCLUSIONARY ZONING AND REGULATORY MEASURES TO FACILITATE AFFORDABLE HOUSING

The project will examine the use of measures such as inclusionary zoning and related land use planning regulations in Canada that are designed to facilitate the provision of affordable housing. The study will investigate the impact of such measures on affordability.

CMHC Project Officer : *Brian Eames* ***CIDN*** : 32810200

Division : Policy and Research Division ***STATUS*** : Ongoing

AVAILABILITY : Product is not yet available

WHOLE VILLAGE KING RURAL COHOUSING: FINAL REPORT

This report, partially funded under the Affordability and Choice Today (ACT) Program, describes how Whole Village worked with municipal and regional officials and groups of interested citizens to develop a set of zoning regulations that would allow community-based housing development, while continuing to control unwanted development activities. The goal was the establishment of an active community that incorporates the following features:

- Cohousing (collaborative housing) development that will accommodate a variety of types of families with different financial resources;
- Biodynamic (organic) farm that will reclaim land for farming that has been out of production;
- Stewardship of a significant area of land, including natural forest and wetland.

This reports describes the successes and challenges of the Whole Village community in demonstrating new environmentally friendly housing options in rural environments.

Prepared by Jeffrey Gold, Whole Village Project Facilitator. Unpublished manuscript, March 2006. 13 pages.

STATUS : New Completed Report

AVAILABILITY : Report is available on a loan basis from Canadian Housing Information Centre

RENTAL HOUSING

BEST PRACTICE GUIDE FOR RESIDENTIAL RENTAL PROPERTY INVESTORS

The objective of this project is to produce the content for a best practice guide for individual residential rental property investors in the Toronto Census Metropolitan Area, a guide which will become a template for developing other city-specific best practice guides for rental property investors. The guide content and accompanying tools will provide detailed information on property acquisition and property management. It will include a profile of the Toronto rental environment and information specific to various property types. This guide will ultimately help raise awareness of the rental investment process and serve as an alternative to outsourcing the management of the properties.

CMHC Project Officer : *Meg Ogden* ***CIDN*** : 30740200

Division : Policy and Research Division ***STATUS*** : Ongoing

AVAILABILITY : Product is not yet available

CMHC STUDENT HOUSING STUDY

Students are faced with a variety of accommodation options while attending post-secondary institutions. These alternatives range from on-campus housing (facilities owned and operated by the college or university) to off-campus choices from living at home or in a family-owned secondary residence to shared or unshared accommodation in the rental market.

The intent of the study was to assess the feasibility of developing a data collection methodology that is actionable and which would be able to generate student housing-related data that is valid, reliable and timely. The developed methodology would then be assessed to determine its ability to gather information on the state of student housing in Canada and the housing options available to students. Benchmark student-housing data and information would focus on, but not be limited, to: student housing costs; housing supply and demand; types of accommodations used by students; and characteristics and location of accommodations, including size, quality and amenities.

Prepared by Phoenix Strategic Perspectives Inc. CMHC Project Officer: Kris Leaman. Ottawa: Canada Mortgage and Housing Corporation, 2004. 2 volumes
Volume 1 In-Depth Interviews with Stakeholders (60 pages; 782 KB)
Volume 2 Pilot Test Report – Review of Methodology (137 pages; 1066 KB)

Note: No. 05-037 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 64936)

STATUS : Completed Reports and Research Highlight

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.g[illegible]/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/studenthousing(w).pdf volume 1
ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/studenthousingvol2(w).pdf volume 2

INDIVIDUAL LANDLORD SURVEY

CMHC commissioned Arcturus Solutions to conduct a telephone research survey during the spring of 2005, in order to better understand the characteristics, attitudes and opinions of these "individual landlords". The survey included questions about the characteristics of individual rental investors, their short and long term plans, their views on the pros and cons of being a rental investor, and details of their rental units.

The results of this study suggest that the business of individual residential rental investment is stable and in good health. An indication of the robustness of the individual rental unit investment business is that more than half the respondents plan to increase the number of units they own within the foreseeable future, whereas less than one-third plan to decrease their overall number. Further, retirement from the business is not top-of-mind for most individual investors interviewed, although most are pragmatic enough to agree that problems with health or an attractive buyout offer might cause them to consider retirement.

The individual investors represented in this study collectively own 8,224 self-contained residential units. Most of these individuals own a small number of units: a third own three or fewer, and one-half own fewer than five. Self-management by the individual owner is by far the most prevalent model of rental unit management and very few anticipate changing to a third-party property manager. Indeed, most respondents expect to maintain the status quo relative to a number of potential activities assessed in this study. The individual residential rental investors who participated in this study are more affirming of the benefits of this business than they are about the challenges. Among benefits, the secure and long-term nature of residential rental unit investment stands out, followed by help in mortgage payment.

Prepared by Arcturus Solutions. Housing Affordability and Finance Series. Ottawa: Canada Mortgage and Housing Corporation, c2006. 110 pages (1953 KB)

Order number: 64857

Note: Disponible aussi en français sous le titre : Enquête auprès des propriétaires-bailleurs individuels

Note: No. 05-025 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 64938)

STATUS : Completed Report

AVAILABILITY : CMHC Information Products and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_bilingual/64857(w)_feb28.pdf

PARKING STANDARDS FOR AFFORDABLE RENTAL HOUSING: PHASE D - FINAL REPORT

In the fall of 2001, the Planning and Building Department of the City of Mississauga applied for a grant from the Federation of Canadian Municipalities Affordability and Choice Today program to study parking demand for public and private non-profit rental housing. The grant was awarded to the City, and subsequently, Beacon Planning Services was retained to undertake the parking study. This report summarizes the results of the consultant's work. It outlines the detailed results of the parking surveys, the analysis of the collected data and recommended parking guidelines. Guidelines for reduced parking are presented for the following categories:

- Peel Living family and senior apartments;
- Peel Living family horizontal multiple dwellings;
- Private non-profit family apartments; and
- Co-operative non-profit family apartments.

The recommendation of this report was to circulate the information to all non-profit housing providers in Mississauga and the Greater Toronto Home Builders Association for review and comment.

Prepared by Planning and Building Department, City of Mississauga. Unpublished manuscript, November 2005. 33 pages

STATUS : New Completed Report

AVAILABILITY : Report is available on a loan basis from Canadian Housing Information Centre

UPDATING THE CMHC ON-LINE RENTAL GUIDE: YOUR GUIDE TO RENTING A HOME

The purpose of this project is to update the CMHC on-line Rental Guide both in content and reference information such as website links.

CMHC Project Officer : *Ian Melzer*

Division : Policy and Research Division

AVAILABILITY : Product is available

CIDN : 33610200

STATUS : Ongoing

ALTERNATIVE DEVELOPMENT STANDARDS ON PINE RIDGE EAST SUBDIVISION: FINAL REPORT

The objective of this project, partially funded under the Affordability and Choice Today (ACT) Program, was to address three problems associated with the urban land development of a parcel of land in the Pine Ridge East Subdivision, City of Guelph, Ontario. The three problems addressed were:

1. Problems associated with narrowing lot frontages, due to escalating infrastructure costs;
2. Lack of privacy on corner lots, affecting both occupancy privacy and streetscape appeal; and
3. Disproportionate consumption of land in pie-shaped lots creating undervalue.

The land had originally been subdivided into 19 conventional single family lots. Through this project, the land was re-subdivided into 23 lots, increasing the number of fully-serviced, single detached homes on the same land area and linear infrastructure. This was achieved by the creation and integration of 4 new lot types that make better use of side yards, front yards, views and infrastructure.

The report covers the alternative development standards; housing designs; cost savings; promotional activities; the consumer media and public response; and provides descriptions of the lots and their features and benefits.

Prepared by Teresa Jeannine Paul, Nexus Solar Corporation. Guelph, Ont.: Nexus Solar Corporation, 2005. 30 pages.

STATUS : New Completed Report

AVAILABILITY : Report is available on a loan basis from Canadian Housing Information Centre

ASSISTING THE CITY OF STRATFORD TO IMPLEMENT THE FUSED GRID CONCEPT

The purpose of this project was to assist the City of Stratford in assessing the benefits of using the Fused Grid planning concept. This assessment was done in the following steps:

1. Alternative plans were drawn for the area of the newly annexed lands.
2. The plans were analyzed for the following quantitative attributes: a) Length of streets; b) Total land area allocated to streets; c) Developable land area; d) Total open space; e) Traffic impact.
3. The plans were also analyzed for qualitative attributes such as connectivity, walkability, safety, tranquility, and delight. For these qualitative attributes measurable indicators were applied to evaluate performance.
4. The plans were evaluated for their impact on municipal capital expenditures and operation and maintenance expenditures with regard to infrastructure elements that are installed and maintained by the city.

Following the presentation of the results of these analyses to the City, the planning committee and council selected the Fused Grid alternative, as adapted to the specific site constraints, as the official secondary plan for the annexed lands.

STATUS : Completed Research Highlight

AVAILABILITY : No. 04-038 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site

CASE STUDIES OF SUSTAINABLE GREENFIELD RESIDENTIAL DEVELOPMENTS

The current approach to residential development that consumes open space on the urban fringe for single-detached dwellings on large lots is recognized as neither economically nor environmentally sustainable. This project is to document sustainable ("green") residential development case studies from across Canada so that developers, municipalities, housing professionals, and community groups can learn about success stories and replicate these "green" solutions, where applicable.

CMHC Project Officer : *Mark Holzman* — ***CIDN*** : 29490200
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

IMPACT OF DEVELOPMENT COST CHARGES ON HOUSING AFFORDABILITY

The objectives of this project are to:

(i) investigate the impact of development cost charges on the price and affordability of housing in Canada;

(ii) identify the costs and benefits of both infill and new subdivision developments in Vancouver, Calgary, Winnipeg, Toronto, Montreal and Halifax; and

(iii) quantify the up-front and ongoing costs or benefits of infill and new subdivision development on the residents of the new development, residents of existing developments, the local government and the community at large.

CMHC Project Officer : *Meg Ogden* — ***CIDN*** : 34060200
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

LIVEABLE LANES: OVERCOMING BARRIERS TO LANE WAY INFILL HOUSING IN B.C.'S GROWING COMMUNITIES

This study aims to identify and shed light on barriers to lane way infill housing in B.C.'s growing communities. It will develop strategies and recommendations for overcoming them and broaden interest in lane way infill housing among residents, builders and other housing sector stakeholders.

CMHC Project Officer : *Susan Fisher* — ***CIDN*** : 34380209
Division : External Research Program — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available — ***NEW***

RESIDENTIAL DEVELOPMENT AROUND TRANSIT NODES

This project will result in 10 case studies of residential development around transit nodes across Canada. This will be done by interviewing the developers and municipal planners involved in the developments and surveying occupants. The aim is to provide developers, municipalities and housing professionals with insights into the successes of the developments and how challenges were or could be overcome, to help them in replicating and building on those solutions.

CMHC Project Officer : *Susan Fisher* — ***CIDN*** : N/A
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

ADAPTING BUNGALOWS FOR SENIORS' HOME CARE: A POST-OCCUPANCY EVALUATION

This research project consists of a post-occupancy evaluation of suburban bungalows that were redesigned for seniors receiving health care services at home. The study aims for the production of an illustrated report compiling typical life stories, combining the day-to-day experiences of participating seniors, the comments of the caregivers and the characteristics of the homes.

CMHC Project Officer : *Luis Rodriguez*
Division : External Research Program
AVAILABILITY : Product is not yet available
CIDN : 26470210
STATUS : Ongoing

ADAPTING THE HOME ENVIRONMENT FOR ALZHEIMER'S AND RELATED DEMENTIA: COLLABORATIVE RESEARCH CREATING A SELF ASSESSMENT TOOL

The objective of this research is to develop a self-assessment tool that will function as a community resource to guide individuals experiencing Alzheimer's Disease and Related Dementia (ADRD) and their families through the process of adapting their home environment while reflecting their individual needs and concerns The research will be conducted in close collaboration with persons with ADRD and their caregivers.

CMHC Project Officer : *Luis Rodriguez*
Division : External Research Program
AVAILABILITY : Product is not yet available
CIDN : 28920214
STATUS : Ongoing

CARING FOR AGING PARENTS: SENIOR ADULTS LIVING WITH ADULT CHILDREN IN PRAIRIE CENSUS METROPOLITAN AREAS

This project's objective is to provide research findings to help the housing industry learn the degree of commitment that exists for this type of personal family care for older parents and assess the implications for the housing market of this form of housing demand.

CMHC Project Officer : *Brian Hollohan*
Division : Market Analysis Centre
AVAILABILITY : Product is not yet available
CIDN : 23031000
STATUS : Ongoing

CONVERSION OF AN EXISTING INSTITUTIONAL BUILDING TO 58 AFFORDABLE/ACCESSIBLE HOUSING APARTMENTS FOR SENIORS AND DISABLED ADULTS IN THE REGIONAL MUNICIPALITY OF YORK (ONTARIO): AFFORDABILITY AND CHOICE TODAY (ACT) PROJECT: FINAL REPORT

In September 2004, the official opening of Armitage Gardens apartments was celebrated in the Town of Newmarket, marking a milestone in the successful conversion of an existing institutional building to affordable, accessible apartments for seniors and disabled adults.

This report chronicles the Armitage Gardens project which revitalized a vacant and under utilized portion of a building into 58 affordable rental apartments in order to provide affordability, choice and quality housing in the Regional Municipality of York.

Prepared by the Regional Municipality of York, Town of Newmarket, Ontario. Unpublished manuscript, December 2005. 13 pages

STATUS : New Completed Report
AVAILABILITY : Report is available on a loan basis from Canadian Housing Information Centre

DETERMINING THE IMPLICATIONS OF THE AGING OF THE CANADIAN POPULATION FOR HOUSING AND COMMUNITIES

The objective of this project is to examine the specific implications of the aging of the Canadian population for housing and communities. The research will be based on existing data and literature, new practical information from experts and key informants in communities, and case studies of communities that have already reached the proportions of seniors that Canada is expected to have over the next 30 years. The emphasis will be on identifying the challenges and opportunities for planning, designing and managing communities (i.e. cities, small towns and suburbs) with increasing older populations. While the project will deal with a range of issues, the main focus will be on urban form and housing. Other related issues, such as transportation, will have a secondary focus.

CMHC Project Officer : *Luis Rodriguez* **CIDN** : 27420200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

DEVELOPMENT OF CURRICULA AND SEMINAR MODULES FOR NEW AND EXPANDED CONSTITUENCIES

The objective of this project is to examine the information needs of new audiences for the Seniors Seminars, e.g.: municipalities, at staff and political levels; Aboriginal communities; provincial and territorial governments whose growing population of seniors merit attention to design and living arrangements for this segment, and; seniors themselves. It will develop a plan to produce curricula and training materials for new seminars. The project will include a feasibility study on delivery to the new audiences and identify strategies on marketing the seminars and securing delivery venues in partnership with these groups. This work will be coordinated with work in the project "Re-evaluation and Enhancement of Existing Senior Seminar Modules".

CMHC Project Officer : *Jim Zamprelli* **CIDN** : 30370200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

DEVELOPMENT OF TRAINING MODULES AND CURRICULUM ON HOUSING FOR SENIORS AND PEOPLE WITH DISABILITIES FOR THE ARCHITECTURAL PROFESSION AND EDUCATION INSTITUTIONS WITH CONSTRUCTION-RELATED PROGRAMS

The objective of this project was to identify the most effective techniques for the development and delivery of seminars on seniors' housing for architects, architectural technologists, and other building and design professionals. The actual results/outputs of the project were learning and training materials, as follows:

- A Module on Residential Adaptations for Independent Living - a PowerPoint presentation, case study, proficiency exercises, a Facilitator's Guide and a Student Guide;
- A Module on Designing for Dementia - a PowerPoint presentation, a Facilitator's Guide and a Student Guide; also
- A case study and proficiency exercises were developed as interactive materials to be used in a web environment.

Material will be available on the CMHC web site, www.cmhc.ca, in due course.

CMHC Project Officer : *Jim Zamprelli* **CIDN** : 26780200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Seminar/training is available

GOVERNANCE OF SOCIAL HOUSING FOR SENIORS: A COMPARATIVE ANALYSIS

The primary objective of this research is to compare the governance of housing for seniors in Quebec, Ontario and Denmark and, in particular, the linkage between housing and home support services. The assumption is that certain types of governance promote a better linkage between home support and housing, but that the players are also important in this linkage. The goal is to find out which structures and which initiatives seem better.

CMHC Project Officer : *Luis Rodriguez* ***CIDN*** : 28920206
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

HOUSING OPTIONS STUDY FOR OLDER ADULTS IN THE REGION OF PEEL

The purpose of the research project is to gather data on housing preferences and needs of older adults in the Region of Peel aged 55 years and older. There are three main goals of the research project:
1) To develop, distribute and analyze responses to a survey that captures the key areas of information required;
2) To facilitate focus groups to obtain required housing needs and preference information;
3) To develop an appropriate approach to obtain required housing needs and preference information from older adults who are identified as being isolated.

CMHC Project Officer : *Brett C Barnes* ***CIDN*** : 30390200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

PILOT IMPLEMENTATION AND DELIVERY OF REVISED SENIORS SEMINARS TO NEW AND EXPANDED AUDIENCES

This project flows from the key main objectives originally established for the Seniors Seminars project, i.e.
a) To increase awareness of CMHC as the Federal government's housing agency and as a major source in Canada of research and knowledge on seniors' housing issues;
b) To increase awareness in the community of the range and type of seniors' housing options that can be made available;
c) To heighten knowledge and take up of CMHC Assisted Housing Programs targeted to seniors and persons with disability (RRAP-D, HASI, Canadian Centre for Public-Private Partnerships in Housing).

The methodologies for meeting project objectives will be:
a) Arranging pilot seminar venues and partnership agreements with host organizations;
b) Promoting the pilot seminars, marketing to key client groups;
c) Locating and engaging seminar presenters and animators, who will be both external contractors and CMHC personnel.

CMHC Project Officer : *Jim Zamprelli* ***CIDN*** : 30380200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

PROJECTING THE HOUSING NEEDS OF AGING ATLANTIC CANADIANS

This research will examine the current housing and support service needs of Atlantic seniors at both the provincial and regional levels. The research team is being led by Mount Saint Vincent University with the collective efforts of a research alliance of 37 members encompassing all four Atlantic Provinces, and representing universities, seniors organizations, housing developers, service providers, and government departments. Funding has been provided by the Social Sciences and Humanities Research Council through the Community-University Research Alliance Program. Funding contributions have also been made by Canada Mortgage and Housing Corporation, the Nova Scotia Department of Community Services, Mount Saint Vincent University, Dalhousie University, University of New Brunswick and the University of Prince Edward Island.

CMHC Project Officer : *Luis Rodriguez* ***CIDN*** : 29520200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

RE-EVALUATION AND ENHANCEMENT OF EXISTING SENIOR SEMINAR MODULES

This project is intended to:
a- follow-up and action the evaluative comments and suggestions for enhancement to modules provided by seminar participants, by the team of presenters during the post-pilot phase debriefings and the retrospective observations made by the project consultant who provided feedback through the workshop evaluations done at most sessions;
b- integrate CMHC research results into the modules to make them more useful to expanded client groups, especially those with more technical educational needs;
c- undertake objectives (a) and (b) in light of the findings, conclusions and recommendations expected to result from the project on consulting new and expanded constituencies.

CMHC Project Officer : *Jim Zamprelli* ***CIDN*** : 30360200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

RENOVATION AND REPAIR REFERRAL AND ADVISORY SERVICE FOR SENIORS AND OTHER HOMEOWNERS: FINAL REPORT

In 2001 approximately 3.9 million Canadians were seniors (i.e., 65 years of age or older). By 2026, that number is expected to grow to almost 7.7 million. The rapid growth in the number of seniors will require alternatives and choices to suit their changing housing needs. Aging-in-place is currently the alternative preferred by the overwhelming majority of seniors. This research was designed to assist them to maintain their independence while living in their homes. It focused on developing a model for renovation and repair referral and advisory services for homeowners, particularly seniors.

The model developed suggests that a Renovation and Repair Referral and Advisory Service for Seniors and Other Homeowners should consist of two major components. The first would help them find local reputable contractors for major repair and renovation requirements; the second would help them find handy persons or "jobbers" who could assist them with minor home adaptations, repairs and maintenance.

The model would bring together a number of key players, including the local Chamber of Commerce, a community seniors' centre, building material suppliers, and the local homebuilders' association. Each would play an important role. For example, the Chamber of Commerce would provide ongoing information about large renovation and repair contractors; the seniors centre would work closely with the chamber of commerce and provide information about handy person advisory services; the building material suppliers could provide referrals for large renovation and repair jobs and handy person services; and the homebuilders' association could provide referrals of its renovator members.

To develop the model, the researcher conducted an extensive literature review; interviews with housing industry and interest groups; a survey of over 20 people, including representatives of consumers, provincial and municipal governments, housing interest groups, building associations and related affiliates; and a focus group with seniors.

Research participants indicated that implementing a renovation and repair advisory service in their community would be a "win-win" situation for both contractors and homeowners/seniors. Having their homes renovated, repaired and maintained with confidence in their contractor selection and decision-making could provide them with the opportunity to continue to live in their homes (age-in-place) for as long as possible.

Prepared by T.A. Marshall, Housing Consultant. CMHC Project Officer: Luis Rodriguez. Ottawa: Canada Mortgage and Housing Corporation, 2006. (External Research Program Report) 95 pages (699 KB)

Note: No. 06-012 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65291)

STATUS : New Completed Report and Research Highlight

AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/CHIC_Reno_Oct18_06(w).pdf

SEMINARS ON SENIORS' HOUSING FOR THE RESIDENTIAL CONSTRUCTION AND HEALTH CARE SECTORS

This project's objective is to develop and undertake delivery of seminars on seniors housing for professionals in the Canadian residential and home care sectors. The project was developed to disseminate the results of CMHC's research, programs and other relevant information concerning seniors housing.

This project entails eight separate modules on different aspects of seniors housing. By year-end 2005 some 4 dozen seminars/presentations were delivered at over 30 events. Evaluation results indicate a very high degree of satisfaction with the seminars and participants indicated they have used or plan to use the information gained at these events. The seminars project is ongoing, with a focus on the health and home care industry, architects and home builders.

CMHC Project Officer : *Jim Zamprelli*

Division : Policy and Research Division

AVAILABILITY : Seminar/training is available

CIDN : 23820200

STATUS : Ongoing

SENIORS' HOUSING FOR SENIORS: A FEASIBILITY STUDY: FINAL REPORT

There has been limited research on the preference and interest of seniors in converting the stock of housing which they own and occupy in order to create secondary suites of self-contained apartments, within existing single family homes.

This pilot study attempts to fill the gap by exploring the interest of senior homeowners in renovating their current homes to include secondary suites; the financial and renovation implications of doing so; and the city regulations and zoning which affect conversion.

The study was undertaken in two neighbourhoods of the City of Ottawa. It involved a telephone survey of 187 senior households, in-depth interviews with 17 households and two focus groups with specialists in the private and public sectors.

Key findings of the survey were that: 19% of senior respondents showed an openness to multiple occupancy, including the creation of secondary suites; the size of homes in both neighborhoods provided considerable scope for renovation due to size; basements were the preferred option for renovation and judged to have potential for occupancy.

Interviews with a selected group of homeowners revealed that: respondents preferred bank loans or mortgages, not reverse mortgages, to finance renovations; women living alone expressed an interest in secondary suites to have companionship in the home; both neighboorhoods were judged by respondents to provide the conditions to age in place; most respondents would hire a contractor to undertake renovations; and a majority did not have any concern about renting to independent seniors.

Findings from the focus group discussion with builders, renovators, real estate specialists and city staff included the following: by-laws were recently changed in order to permit secondary suites throughout the city; the full-cost of renovations was not necessarily reflected in the resale value of a house: costs could be kept down by renovating basements rather than upper floors; senior homeowners should be informed of the advantages of secondary suites; and seniors would benefit from having access to one-stop shopping services in matters related to financing, building, maintaining and managing secondary suites.

Prepared by Glenn Drover and William Wade, The Council on Aging of Ottawa. CMHC Project Officer: Luis Rodriguez. Ottawa: Canada Mortgage and Housing Corporation, 2006. (External Research Program Report) 92 pages (3212 KB)

Note: No. 06-023 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65308)

STATUS : New Completed Report

AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Seniors_Feasability_Study_Web.pdf

SUPPORTIVE HOUSING FOR HOMELESS AND HARD-TO-HOUSE- -SENIORS: AN IN-DEPTH CASE STUDY

This research will provide an in-depth description of a successful supportive housing project for homeless and hard-to-house seniors, with a focus on outcomes, lessons learned and advice for other supportive housing projects.

CMHC Project Officer : *Anna Lenk*	***CIDN*** : 34380212
Division : External Research Program	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	***NEW***

SOCIAL HOUSING

REGENT PARK LONGITUDINAL HEALTH STUDY

This study will investigate the effects of the Regent Park Social Housing Revitalization Project - Phase I Redevelopment on the health and well-being of residents, and how interventions in the built environment may reduce health inequalities and improve the lives of low-income, urban populations, using a quasi-experimental research design. The redevelopment plan seeks to: a) create social mix; b) promote positive social interaction (using innovative architectural and urban designs); and c) create affordable home ownership for a subset of residents.

CMHC Project Officer : *Mark Salerno*	***CIDN*** : 34470200
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	***NEW***

SUSTAINABLE DEVELOPMENT & HEALTHY HOUSING

COMMUNITY PLANNING AND DESIGN CHARRETTES

This project has contributed to design charrettes in several ways including participation in charrettes, financial support towards costs to retain a consultant and covering logistical expenses. A community planning and design charrette was held for the West Hills residential subdivision in the City of Fredericton to develop sustainable visions for the subdivision. A 2 ½ day design charrette was held in the City of Kelowna to establish designs for transit oriented development nodes and another charrette was held in Fort McMurry to develop approximately 300 units of affordable and sustainable housing. This project also supported a community planning and design charrette training session offered by CMHC at the World Urban Forum (WUF III) Conference in Vancouver in 2006.

CMHC Project Officer : *Cynthia Rattle*	***CIDN*** : 31740200
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

CRITERIA AND METHOD FOR EVALUATING SUBDIVISION PLANS FOR LIVABILITY AND SUSTAINABILITY

This project examines what, if any, criteria are currently used by municipalities to evaluate development plans for livability and sustainability. The project consists of a literature review of the criteria and evaluation methods of 10 Canadian and international systems. The first stage of the report, literature review, has been completed. An assessment of the validity, rigour and relevance of these systems for a Canadian system will follow.

CMHC Project Officer : *Fanis Grammenos*	***CIDN*** : 31710200
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

IMPACT OF HOUSING CHOICES: CONSUMER INFORMATION ON SUSTAINABLE COMMUNITY PLANNING

The purpose of this project is to analyze demographic, housing, transportation and energy data and to develop a consumer-oriented information product comparing the impact of various housing choice scenarios, each with different community planning patterns. Users of this web based product will be able to select among five Canadian cities. In each city, five typical neighbourhood development patterns and locations within the urban context will be described, highlighting issues such as private vehicle use, access to daily destinations and availability of private space. The research has been completed and a web-based information product is currently in production.

CMHC Project Officer : *Susan Fisher*

CIDN : 22800200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

KANATA HEALTHY HOUSING PROJECT: SUSTAINABLE FIRST NATIONS HOUSING AND COMMUNITY DEVELOPMENT IN KAHNAWAKE: FINAL REPORT

In 1988 a team comprised of community leaders from the Mohawk Council of Kahnawake and Cultural Center and local environmental consultants was created to explore the potential of an "Innovative House" construction grant from the Department of Indian Affairs. Under the encouragement of the project consultants and the CMHC, the project, dubbed Kanata 2000, quickly shifted from the scale of individual house to sustainable neighbourhood. Its mission, sanctioned by the Mohawk Band Council, was to empower the community with the tools and models to choose a sustainable shelter and lifestyle.

This report, partially funded under the Affordability and Choice Today (ACT) Program, describes the history of the Kanata Healthy Housing Project and outlines its characteristics.

Written by Julia Bourke, project architect and master planner, Fiset Miller Bourke Architects. Unpublished manuscript. 41 pages

STATUS : New Completed Report

AVAILABILITY : Report is available on a loan basis from Canadian Housing Information Centre

MUNICIPAL PLANNING POLICY FOR THE MITIGATION OF RESIDENTIAL ENCROACHMENT ACTIVITIES WITHIN THE EDGES OF URBAN FORESTS

This study evaluates the effectiveness of municipal policies in southern Ontario that seek to limit the encroachment activities of adjacent residents within municipal forests. It will also determine the type, intensity and real extent of the evidence of encroachment activities.

CMHC Project Officer : *Susan Fisher*

CIDN : N/A

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

RETROFIT OPPORTUNITIES FOR GREYFIELD REDEVELOPMENT IN SMALL AND MEDIUM SIZE ONTARIO CITIES

This research project explored the issue of the redevelopment of greyfields - failed or failing retail sites and their associated parking lots. These sites have now come full circle as their owners look for alternate uses such as housing. The project included a literature review and case studies which provide tangible examples of how this approach to planning and development can feasibly be put into practice. The ten case studies, 3 municipal initiatives and 7 built projects, are completed and have been posted to the CMHC website at http://www.cmhc-schl.gc.ca/en/inpr/su/sucopl/sucopl_005.cfm

STATUS : Completed

AVAILABILITY : Product is available on the web (see above)

SITE CONTROL FOR SUSTAINABLE COMMUNITY DEVELOPMENT

This research project investigated case studies in Nelson and Victoria, BC where the role of site control and ownership played a significant role in ensuring that land use and development outcomes were aligned with the community's vision for the site and were supportive of sustainability principles. The results of this research suggest while improvements to the land use planning process are important, site control actors are required that can play a proactive role in land use development to promote and demonstrate the tangible benefits of sustainable community development.

CMHC Project Officer : *Fanis Grammenos*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 28370213
STATUS : Ongoing

SMART GROWTH IN CANADA: IMPLEMENTATION OF A PLANNING CONCEPT

This project did a critical assessment of the smart growth movement by attempting to find answers to the following questions: Which cities in Canada have made genuine efforts to adopt the new approach and alter their development patterns in a fundamental way? What successes have these cities experienced and where have they failed? What are the reasons behind both successes and failures? And what are the lessons we can draw for the viability of the new approach in the Canadian context? To address these questions, six Canadian municipalities of varying sizes were selected from six provinces, that have a reputation of being leaders in smart growth. The project looked at what they have proclaimed as their goals and policies, and evaluated, through an in-depth case study approach (reviewing planning documents, collecting statistics, interviewing relevant officials), what they have actually done to implement the stated goals and what they have achieved "on the ground". In general, this study has shown that there is a large gap between the stated growth management policies found in the planning documents of the six study regions and accomplishments on the ground. While major progress has been made in terms of language and policy goals, performance is lagging behind considerably.

Prepared by Ray Tomalty and Don Alexander, Cooperative Research and Policy Services. CMHC Project Officer: Fanis Grammenos. Ottawa: Canada Mortgage and Housing Corporation, 2005. (External Research Program Report) 248 pages (3803 KB)

Note: No. 05-036 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 64931)

STATUS : Completed Report and Research Highlight

AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/smart%20growth_(w)_jan6.pdf

SUSTAINABLE COMMUNITY PLANNING AND DESIGN CHARRETTE SUPPORT AND PARTICIPATION

This project will continue to contribute to sustainable community design charrettes by providing financial and event planning assistance and/or direct CMHC staff participation and publication of results for certain selected charrettes. A charrette was held in Fort McMurray Alta. and Perth Ontario. There will be another in Winnipeg and other potential charrettes have been identified and are being pursued.

CMHC Project Officer : *Douglas B Pollard* ***CIDN*** : 34110200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

See also: Technical Research on Sustainable Development & Healthy Housing, p. 53-59.

URBAN TRANSPORTATION

ASSESSING TRAVEL AND ENVIRONMENTAL ASPECTS OF THE FUSED GRID

This research project will investigate the relationship between street network type and travel behaviour with a focus on testing the performance, using empirical measures of micro-scale street environment and travel survey data, of the 'Fused Grid' street network design. Of particular interest is whether street networks that approximate the Fused Grid (high connectivity for non-motorized modes with disconnected routing for motor vehicles) actually result in greater non-motorized mode share and reduced motor vehicle use when compared to other street network types. The results will provide information to guide revisions to street standards for new residential developments and will have implications for the retrofit of existing street networks.

CMHC Project Officer : *Fanis Grammenos* ***CIDN*** : 28920205
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

ASSISTING MUNICIPALITIES AND DEVELOPERS TO EVALUATE AND APPLY THE FUSED GRID CONCEPT: PART 1 - A TRAFFIC ANALYSIS STUDY

This study will compare the traffic performance of three different neighbourhood layouts including district and regional streets in a real setting. The intent is to conduct a comparative assessment of the relative merits of various road network and land-use approaches, including the conventional suburban development (featuring loops and cul-de-sacs); the traditional neighbourhood development or TND (featuring the traditional city grid); and a Fused-Grid layout, which combines elements of the traditional grid with those of conventional suburban layouts. This project will assess the comparative traffic flow characteristics of these three alternative street layout patterns. It will examine their performance in a real life context using travel related statistics from an existing built-up Ottawa district on which two alternative street layouts will be superimposed.

CMHC Project Officer : *Fanis Grammenos* ***CIDN*** : 34160200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

HOUSING DISCRIMINATION AGAINST VICTIMS OF DOMESTIC VIOLENCE

This study, under the External Research Program (ERP) funded by Canada Mortgage and Housing Corporation (CMHC), attempted to find out if landlords discriminate against battered women. The first goal of the research was to find out if landlords discriminate against:

- victims of domestic violence who say they have a child;
- victims of domestic violence who don't say they have a child;
- victims of domestic violence who say they have a job;
- victims of domestic violence who say they don't have a job.

There were two hypotheses for this research goal:
1. A landlord is more likely to say there is a rental unit available if a caller does not say where she is staying, than if she says she is staying in a shelter for battered women.
2. A landlord is more likely to say there is a rental unit available if the caller says she is staying with friends than if she says she is staying in a shelter for battered women.

The second goal of the research was to determine if landlords would admit discrimination to a researcher. The research also tested an unobtrusive method, leaving a message on an answering machine, to explore housing discrimination.

Prepared by Paula C. Barata and Donna E. Stewart. CMHC Project Officer: Marcelle M. Gareau. Ottawa: Canada Mortgage and Housing Corporation, 2006. (External Research Program Report) 62 pages (867 KB)

Note: No. 06-010 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65096)

STATUS : New Completed Report and Research Highlight

AVAILABILITY : Canadian Housing Information Centre and ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/CHIC-Discriminations(w).pdf

YOUTH AND HOUSING

PILOT SURVEY OF SHELTERS FOR YOUTH WHO ARE VICTIMS OF FAMILY VIOLENCE

Under a Memorandum of Understanding between Statistics Canada and Canada Mortgage and Housing Corporation, the Transition Home Survey will be expanded through a pilot survey project to gather baseline information on youth shelters from across Canada addressing family violence issues.

CMHC Project Officer : *Ed Nera*

CIDN : 34210200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

See also: TRANSFERABILITY OF THE "SAFE IN THE CITY" APPROACH TO YOUTH HOMELESSNESS PREVENTION IN CANADA: FINAL REPORT, p. 81

CMHC RESEARCH REPORT LISTINGS

To provide quick and comprehensive access to CMHC research published on a given topic, the Canadian Housing Information Centre compiles comprehensive listings of housing research produced over a number of years on certain topics. Topics chosen are those for which there is ongoing client interest and/or for which CMHC has published considerable research. To obtain an electronic, faxed or mailed copy of any of the lists below, contact the Canadian Housing Information Centre at: 1-800-668-2642 or e-mail us at: chic@cmhc.gc.ca

Listings available at this time include:

- Aboriginal Housing
- Acoustics
- Affordable Housing
- Airtightness
- Basements, Foundations and Crawl Spaces
- Concrete
- Condominiums
- Cooperative Housing
- Environmental Site Assement and Contaminated Lands
- Healthy Housing
- Heating and Ventilation
- Homelessness
- Housing and Women
- Housing Export Opportunities
- Housing for Older Canadians
- Housing for Persons with Disabilities
- Indoor Air Pollution
- Infrastructure
- Lead
- Log Home Construction
- Manufactured Housing
- Moisture Problems
- Mortgages and Housing Finance
- Newcomers, Immigration & Settlement
- Northern Housing
- Rental Housing
- Residential Construction Waste
- Residential Renovation
- Self Help Housing
- Social Housing
- Straw Bale Housing
- Sustainable Development
- Water Conservation, Reuse and Management

ABOUT YOUR HOUSE SERIES

Fact sheets on common housing questions, issues and problems.

These documents are available in HTML and Adobe Acrobat format (pdf) on the CMHC web site at: http://www.cmhc-schl.gc.ca/en/burema/gesein/abhose/abhose_060.cfm

Print copies can be obained by calling 1-800-668-2642

Order no.	Series no.	Title
62027	CE 1	**Measuring Humidity in Your Home** Is there condensation on the windows? Are there wet stains on the walls or ceilings? Is there static or sparks whenever you touch something? Diagnose humidity problems in your home. Aussi disponible en français sous le titre : Mesurer l'humidité dans votre maison
62028	CE 2	**Combustion Gases in Your Home** Do you have a gas or oil fired furnace, boiler or water heater? What about a woodstove or fireplace? Take the necessary steps to keep combustion gases out of your home. Aussi disponible en français sous le titre : Les gaz de combustion dans votre maison
62029	CE 3	**Asbestos** What is asbestos? Why is it so useful? What problems can asbestos cause and what options does the homeowner have in dealing with them? Aussi disponible en français sous le titre : Amiante
62030	CE 4	**Hydronic Radiant Floor Heating** Heating option for homes. Tubes are placed in concrete floor with water running through. Popular in bathrooms and kitchen, and can be done for entire house - new or existing. Aussi disponible en français sous le titre : Système de chauffage à eau chaude par rayonnement à partir du sol
62031	CE 5A	**Understanding Window Terminology** This factsheet offers helpful guidance on buying the right type of window for your home. Terminology commonly used in the window industry is also presented. Aussi disponible en français sous le titre : Comprendre la terminologie des fenêtres
62032	CE 6	**Urea-Formaldehyde Foam Insulation (UFFI)** What is UFFI? Why was it banned? Should you be concerned about UFFI? How do you know if your home has UFFI? Aussi disponible en français sous le titre : Mousse isolante d'urée-formaldéhyde (MIUF)

Order no.	Series no.	Title
60515	CE 7	**After the Flood** Protect your health and prevent further damage to your home by following this step-by-step guide to restoring your home after a flood. Aussi disponible en français sous le titre : Après une inondation
60516	CE 8	**Fighting Mold: The Homeowner's Guide** Mold can cause allergies or respiratory disease. Learn how to identify and eliminate mold from your home. Aussi disponible en français sous le titre : Combattre la moisissure -- Guide pour les propriétaires-occupants
62043	CE 9	**Maintaining Your HRV** For a clean and healthy living environment, review the seven steps to maintaining the Heat Recovery Ventilator (HRV). Aussi disponible en français sous le titre : L'entretien du VRC
60339	CE 10	**Wood Heat Safety in an Emergency** Whether you often use a wood stove or a fireplace, or are coping with an emergency loss of electricity, learn how to safely use wood to heat your home. Aussi disponible en français sous le titre : Le chauffage au bois en toute sécurité lors d'une situation d'urgence
60356	CE 11	**When You Must Leave Your House Due to Prolonged Winter Power Outage** A series of practical tips to protect your home in case you are required to evacuate for more than 24 hours because of power failure. Aussi disponible en français sous le titre : Si vous devez quitter votre maison à cause d'une longue interruption de courant en hiver
60360	CE 12	**Helping Your Trees Survive Storm Damage** Practical pruning advice to restore the health and shape of trees damaged by ice or wind storms. Aussi disponible en français sous le titre : Soins à donner aux arbres endommagés par une tempête
62034	CE 13	**Attic Venting, Attic Moisture, and Ice Dams** How do you deal with a leak in the ceiling? How should an attic be properly vented? How do you eliminate ice dams? This fact sheet will answer these and other attic related questions. Aussi disponible en français sous le titre : Ventilation du vide sous toit, humidité dans le vide sous toit et formation de barrières de glace

Order no.	Series no.	Title
62035	CE 14	**Soot Staining on Carpets** Does your carpet have permanent dark stains near baseboards, air registers or under doorways? Find out what causes carpet streaking and what you can do about it. Aussi disponible en français sous le titre : Taches en traînée sur les moquettes
62036	CE 15	**Removing Ice on Roofs** Whether you have a sloped or flat roof, learn techniques that will help you deal with extensive roof icing or ice dam problems. Aussi disponible en français sous le titre : L'enlèvement de la glace sur les toitures
62037	CE 17	**The Importance of Bathroom and Kitchen Fans** Choosing the proper kitchen and bathroom fans is important for improving indoor air quality and maintaining ideal humidity levels. Aussi disponible en français sous le titre : Importance des ventilateurs de cuisine et de salle de bains
62038	CE 18	**How to Read a Material Safety Data Sheet (MSDS)** Reading and understanding the Material Safety Data Sheet (MSDS) provides product information about product hazards and the necessary safety precautions to follow when using it. Aussi disponible en français sous le titre : Comment déchiffrer une fiche technique sur la sécurité des substances (FTSS)
62039	CE 19	**Insulating Your House** Choose the right insulation to reduce the amount of energy you use and to make your home more comfortable. Aussi disponible en français sous le titre : L'isolation de votre maison
62040	CE 21	**Log Homes: Frequently Asked Questions** A list of questions and answers concerning the unique design and building considerations for log homes. Aussi disponible en français sous le titre : Foire aux questions - maisons en rondins
62041	CE 22	**Your Furnace Filter** To reduce exposure to airborne particles, choose the furnace filter that best suits your needs. Aussi disponible en français sous le titre : Le filtre de votre générateur d'air chaud

Order no.	Series no.	Title
62042	CE 23	**Water-Saving Tips for Your Lawn and Garden** Often water is applied inefficiently, resulting in significant waste due to over watering, evaporation or run-off. Here are some general watering tips to avoid such waste. Aussi disponible en français sous le titre : Comment entretenir vos pelouses et jardins en économisant l'eau
60417	CE 24	**Backup Power for Your Home** The top ten tips in choosing the appropriate backup system to provide electricity to your home in the event of a prolonged power failure. Aussi disponible en français sous le titre : Alimentation de secours pour votre maison
62046	CE 25	**Carbon Monoxyde** A list of questions and answers dealing with keeping Carbon Monoxide out of your home and to help you choose the right CO detector. Aussi disponible en français sous le titre : Le monoxyde de carbone
62277	CE 26a	**Hiring a Contractor** How do you find the "right" contractor for you? What should go in a contract? What are liens, holdbacks and completion certificates? Make sure you get what you want and pay for when hiring a contractor. Aussi disponible en français sous le titre : Le Choix d'un entrepreneur
62351	CE 26b	**Sample Renovation Contract** A detailed written contract between you and the contractor you hire is essential to any renovation or home repair project, no matter its size. Aussi disponible en français sous le titre : Modèle de contrat de rénovation
62045	CE 27	**Choosing a Dehumidifier** Air that is too damp can cause condensation on windows, water damage to materials, mold and even wood rot. Choose the right dehumidifier to regulate the humidity in your home. Aussi disponible en français sous le titre : Le Choix d'un déshumidificateur
	CE 28	**The Renovation Project (12 parts)**
		This series will assist you in making informed decisions before you renovate. Each easy-to-read fact sheet helps you ask the key questions, reviews the available options and discusses the consequences if certain aspects of the renovation are overlooked. Advance planning is the key to successful renovations. These fact sheets help you plan, assess, and avoid surprises. Achieve the results you want by doing your renovation right the first time.

Order no.	Series no.	Title
62246	CE 28a	**Assessing the Renovation Project** Before renovating, it's important to assess your home's current condition to determine if there are significant problems that you must deal with before or during the renovation project. Aussi disponible en français sous le titre : Évaluation des travaux de rénovation
62248	CE 28b	**Renovating your Basement - Structural Issues and Soil Conditions** Renovating a basement can add value and extra living space to a home. Fixing foundation problems before renovating is essential to preserve the durability and structure of the house. Aussi disponible en français sous le titre : Rénovation du sous-sol - Aspects structuraux et conditions du sol
62250	CE 28c	**Renovating Your Basement - Moisture Problems** Is there condensation on the basement windows? Are there white chalky stains on the foundation? Do the carpets smell musty? Creating a clean, dry and healthy living space is a critical first step. Aussi disponible en français sous le titre : Avant de rénover votre sous-sol - Problèmes d'humidité
62252	CE 28d	**Renovating Your Kitchen** The kitchen is often the most used room in the house and kitchen renovations typically have the highest financial payback. Conduct a pre-renovation inspection and prioritize the most desirable features for your new kitchen. Aussi disponible en français sous le titre : Avant de rénover votre cuisine
62254	CE 28e	**Renovating Your Bathroom** Bathroom renovations offer the second highest financial payback rate and are one of the most common home improvement projects. Use this fact sheet to check for problems before you renovate. Aussi disponible en français sous le titre : Rénovation de la salle de bains
62256	CE 28f	**Window and Door Renovations** Do you want more natural light in your living area? Are you concerned about security? Before repairing or replacing windows and doors, consider all of the factors outlined in this fact sheet. Aussi disponible en français sous le titre : Nouvelles portes et fenêtres

Order no.	Series no.	Title
62258	CE 28g	**Repairing or Replacing Roof Finishes** Regular maintenance and periodic roof inspections will identify problems before they cause costly damage to your home. Learn about the key factors that will determine whether you should repair or replace your roof. Aussi disponible en français sous le titre : Avant de réparer ou remplacer le revêtement du toit
62260	CE 28h	**Repairing and Replacing Materials - Exterior Walls** Exterior finish materials must prevent rain and snow from penetrating the building and causing moisture damage. Repairing or replacing exterior wall finishes will protect and preserve the durability and structure of the home. Aussi disponible en français sous le titre : Avant de réparer ou remplacer des matériaux - les murs extérieurs
62262	CE 28i	**Energy Efficient Retrofit - Mechanical Systems** Upgrading the heating, cooling and ventilation (HVAC) equipment is the best way to create a healthy, comfortable and less expensive home to operate. Before altering these, it is important to understand how the overall performance of the house will be affected. Aussi disponible en français sous le titre : Avant d'améliorer l'efficacité énergétique de votre maison - installations mécaniques
62264	CE 28j	**Energy Efficient Retrofit - The Building Envelope** The envelope, or outer layer, of your house separates living space from the outdoor elements. Improving it can result in a better insulated, more airtight home that is easier to heat. Aussi disponible en français sous le titre : Améliorer l'efficacité énergétique - L'enveloppe du bâtiment
62266	CE 28k	**Assessing the Comfort and Safety of Mechanical Systems** The heating, ventilating and air conditioning (HVAC) systems are a vital part of your home. Ensure that your mechanical systems are operating safely and efficiently. Aussi disponible en français sous le titre : Évaluation de vos installations mécaniques - confort et sécurité
62268	CE 28L	**A New Addition** Before building an addition, clearly identify the features you need and inspect the current structure and mechanical systems to be sure they can support the new addition. Aussi disponible en français sous le titre : Avant de construire une annexe

Order no.	Series no.	Title
62044	CE 29	**Should you get your Heating Ducts Cleaned?** Should you get your heating ducts cleaned? Will clean ducts result in improved air quality? When is duct cleaning most appropriate? This fact sheet separates fact from fiction. Aussi disponible en français sous le titre : Doit-on faire nettoyer les conduits de chauffage?
63322	CE 30	**Water Damage, Mold and House Insurance** You've had water damage in your house due to a burst pipe, a roof leak, or a heavy summer storm. You hope that your insurance will cover the damage. What to do? Aussi disponible en français sous le titre : Moisissure, dommages causés par l'eau et assurance habitation
62226	CE 31	**Understanding and Dealing with Interactions Between Trees, Sensitive Clay Soils and Foundations** Is the size, type or siting of a tree affecting your foundation? Understanding the interactions between trees, soils and the foundation can help you avoid foundation shifting, cracks and other damage. Aussi disponible en français sous le titre : Comprendre l'interaction des arbres, du sol d'argile sensible et des fondations et agir en conséquence
62288	CE 33	**CMHC Garbage Bag Airflow Test** This simple test uses an ordinary garbage bag to help you estimate airflow from your furnace registers, bathroom exhaust fan or clothes dryer exhaust. Aussi disponible en français sous le titre : Essai de mesure du débit d'air à l'aide d'un sac à ordures
62795	CE 34	**Your Septic System** A primer on the components, operation and proper maintenance of an in-ground septic tank and system. Aussi disponible en français sous le titre : Votre installation d'assainissement
62839	CE 35	**Hiring a Home Inspector** One of the best ways to understand about a home's condition, habitability and safety is to hire a professional home inspector. Aussi disponible en français sous le titre : Le Choix d'un inspecteur en bâtiment
62341	CE 36	**The Condominium Owners' Guide to Mold** Special advice for identifying and removing mold in a condo, and solving the problems that cause it. Aussi disponible en français sous le titre : Guide sur la moisissure à l'intention des copropriétaires

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Order no.	Series no.	Title
63902	CE 37	**The Tenant's Guide to Mold** This guide provides tenants of apartment buildings or rental houses with information to understand why mold grows and what they can do if they find mold growing in their unit. Aussi disponible en français sous le titre : Guide sur la moisissure à l'intention des locataires
64066	CE 38	**How to Reduce Chemical Contaminants in Your Home** This guide focuses on reducing exposure to chemical contaminants in the home, and will help you identify and avoid household products and materials which are sources of chemical contaminants. Aussi disponible en français sous le titre : Réduire les contaminants chimiques dans votre maison
62935	CE 39	**Buying a Toilet** Advice and tips on what to look for when buying a toilet. Aussi disponible en français sous le titre : L'achat de toilettes
63319	CE 40	**Buying a House with a Well and Septic System** Information on what to inspect and test if a property has a well and/or septic system. Includes checklists for potential buyers. Aussi disponible en français sous le titre : L'achat d'une maison avec un puits et une installation septique
62953	CE 41A	**UV Water Treatment** Describes the ultra-violet light water treatment process, and the pros and cons of using such a system. Aussi disponible en français sous le titre : Traitement de l'eau aux rayons ultraviolets (UV)
62898	CE 41B	**Water Distillers** Everything you ever wanted to know about water distillers from how they work to how to install and maintain them. Aussi disponible en français sous le titre : La distillation de l'eau
62896	CE41C	**Water Filters** Consumer series of household water treatment options. Water filters are an inexpensive method of additional water treatment. Some filters can remove certain contaminants such as lead. Aussi disponible en français sous le titre : Filtres à eau
62946	CE 41D	**Water Softeners** Find out how a water softener works and obtain information on whether you should consider installing one. Aussi disponible en français sous le titre : Les adoucisseurs d'eau

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Order no.	Series no.	Title
62962	CE 41E	**Reverse Osmosis Water Treatment** Describes the reverse osmosis water treatment process, and provides the pros and cons of using such a system. Aussi disponible en français sous le titre : Filtration de l'eau par osmose inverse
62966	CE 42	**Canada's Construction System** The purpose of this document is to foster understanding of the elements of the system of construction and operation of buildings and houses in Canada. Aussi disponible en français sous le titre : Système de construction canadien
63890	CE 43	**Photovoltaics (Pvs)** Consumer information piece presenting information on solar electric (photovoltaic) systems for housing Aussi disponible en français sous le titre : Les systèmes photovoltaïques
63134	CE 44	**Painting: Walls, Ceilings and Floors** This fact sheet provides general information on: selecting paints, e.g. latex (water based) or alkyd (oil based); types of paint and paint finishes, e.g. low or high sheen, sealer, primer, melamine; estimating quantity of paint required; preparing for painting; and painting tips. Aussi disponible en français sous le titre : La peinture : murs, plafonds et planchers.
63144	CE 45	**Flooring Choices** A quick summary of the advantages, considerations, installation, maintenance, and costs to think about when choosing resilient, laminate, and wood flooring, as well as carpet and ceramic tile. Aussi disponible en français sous le titre : Les revêtements de sol
63349	CE 46	**Fighting Asthma in Your House** Practical tips to help people with asthma improve the indoor air quality of their home. Aussi disponible en français sous le titre : Combattre l'asthme à la maison
63218	CE47	**Home Maintenance Schedule** This fact sheet provides a listing of the regular home maintenance tasks which should be done at various times throughout the year to protect the condition of your house. Aussi disponible en français sous le titre : Calendrier d'entretien de votre maison

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Order no.	Series no.	Title
63227	CE48	**Replacing Your Furnace** This fact sheet provides information for consumers who are replacing their existing furnace with a new one. It deals with fuel choice, furnace selection, and furnace sizing. Aussi disponible en français sous le titre : Le remplacement d'un générateur de chaleur
63235	CE 49	**Getting Your House Ready to Sell** Tips for homeowners who wish to get their house ready to sell. Aussi disponible en français sous le titre : Ce qu'il faut faire avant de mettre votre maison en vente
63436	CE50	**Avoiding Basement Flooding** Basement flooding leads to damage of the finishing material and possible growth of mold. This document reviews why basements flood and how to prevent floods from occurring. Aussi disponible en français sous le titre : Comment prévenir les inondations de sous-sol
63486	CE51	**Get to Know Your Soil** This fact sheet provides practical tips on how to analyse soil so that you can select the plants that are suited to the soil you have on your property. Once you have determined the soil conditions, it provides tips on how to amend it, if needed. Aussi disponible en français sous le titre : Apprenez à connaître votre sol
63488	CE52	**Low-Maintenance Lawns** Low-maintenance lawns help to reduce the time, costs, water, pesticides, fertilizer and energy used to maintain lawns. This fact sheet describes the benefits and provides practical tips on how to install and maintain low maintenance lawns, including species selection. Aussi disponible en français sous le titre : Les pelouses à faible entretien
63490	CE53	**Rain Gardens: Improve Stormwater Management in Your Yard** Rain gardens are landscaped areas designed to receive stormwater and allow it to infiltrate into the soil. This fact sheet describes the benefits and provides practical tips on how to install and maintain gardens. Aussi disponible en français sous le titre : Un jardin pluvial pour mieux gérer les eaux de ruissellement dans votre cour
63492	CE54	**Understanding Your New Home Sales Contract** This fact sheet provides information on some of the terms and provisions that you may find in a new home sales agreement to illustrate what a contract can cover and an explanation why. Aussi disponible en français sous le titre : Comprendre le contrat de vente de votre maison neuve

Order no.	Series no.	Title
63495	CE55	**Selecting A New Home Builder** This fact sheet provides information on how to find and what to look for and consider when searching for the right builder to build your new home. Aussi disponible en français sous le titre : Le choix d'un constructeur d'habitations
63637	CE56	**Preventing Falls on Stairs** This fact sheet tells you about some of the ways you can reduce the risk of falling on or from residential stairs. Aussi disponible en français sous le titre : Comment prévenir les chutes dans les escaliers
63730	CE57	**Efficient, Convenient Wood Heating** This is a short guide to the proper use of woodburning appliances in homes: what appliances to choose, how to operate them efficiently, what wood to burn, how to cut and store it, etc. Aussi disponible en français sous le titre : Le chauffage au bois pratique et efficace
63683	CE58	**The ABC's of Windows** This document will help consumers understand and select window performance levels with respect to airtightness, rain penetration and wind resistance appropriate for their climatic (and geographical) location and exposure conditions. Aussi disponible en français sous le titre : L'ABC des fenêtres
63911	CE59	**Should You Test the Air in Your Home for Mold?** Testing the air in their home or apartment for mold is usually the first thing many people ask for when they suspect the presence of mold or have discovered mold growth. This fact sheet explains why air testing is not recommended, why an investigation by a trained professional is more useful and what to do if testing is deemed necessary. Aussi disponible en français sous le titre : Faut-il faire analyser l'air de la maison pour déceler la présence de moisissures?
63822	CE60	**What to Do After a Fire** Protect your health and prevent further damage to your home by following this detailed guide on the steps to restore your home after a fire. Aussi disponible en français sous le titre : Que faire après un incendie

64092	CE61	**Renovating Your Basement for Livability** This About Your House describes how renovating a full-height basement can be a relatively easy and cost-effective way to add new living space to your house. Aussi disponible en français sous le titre : Rénovation du sous-sol - objectif d'habitabilité
64064	CE62	**Lead in Older Homes** This About Your House describes where lead is found in older homes and who is at risk to lead exposure. It also describes procedures for testing lead in soil, water, paint, and dust. Aussi disponible en français sous le titre : Le plomb dans les vieilles maisons
64949	CE63	**Accessible Housing by Design - Ramps** For anyone who needs to make their house accessible to someone who uses a wheelchair or other mobility device, this About Your House sheds light on the design and construction of ramps for the home. After reading this publication, you will understand how a ramp should be built, the materials that should be used and things to take into consideration before building a ramp for your home. Aussi disponible en français sous le titre : Une habitation accessible dès la conception - Les rampes d'accès
64961	CE64	**Accessible Housing by Design - Appliances** The design of an appliance can make it very easy or very difficult to use. If you have a disability, limitations in an appliance's design can make it almost impossible to use. This AYH can ease the selection of an appliance by making suggestions, and providing considerations before you purchase your appliance. The AYH also describes safety features of appliances - an important consideration when buying an appliance. Aussi disponible en français sous le titre : Une habitation accessible dès la conception — les appareils
65009	CE65	**Garden Suites** With municipal approval, a garden suite is a self-contained unit, set on relative's property with an existing single family house. This publication provides introductory information on garden suites for seniors or persons with disabilities. Aussi disponible en français sous le titre : Les pavillons-jardins

63419	AE1	**Solving Odour Transfer Problems in Your Apartment** One of the most common problems experienced by the occupants of apartment buildings is the transfer of objectionable odours from one apartment to another. Tobacco smoke and cooking odours top the list of complaints. This fact sheet explains how odours are transferred, and offers a number of potential solutions. Some are very easy to implement and others should be done with the agreement of the building management. Some are trial and error. Solving the problem can take perseverance. Aussi disponible en français sous le titre : Enrayez la transmission d'odeurs dans votre appartement
63904	AE2	**Reducing Noise in Your Apartment** This article provides basic information about the behaviour of sound and noise and suggests ways to improve the peace and tranquility in your apartment or condominium. Aussi disponible en français sous le titre : Atténuation du bruit dans votre appartement
65013	AE3	**Dealing with Power Outages** Lengthy power outages rarely occur in Canada, but when they do, they can affect your comfort and safety. This fact sheet, intended specifically for occupants of multi-unit residential buildings, will help you plan ahead for, and deal with, power outages in your apartment building. Topics include, amongst others, contents of an emergency kit, use of alternate power, and summer and winter power failures. Aussi disponible en français sous le titre : Les pannes de courant
65050	AE4	**Fire Safety** Each year, many Canadians are injured or die in house or apartment fires. This fact sheet, intended specifically for occupants of multi-unit residential buildings, offers practical fire prevention tips and important information regarding smoke alarms. It will also help you create an escape plan for you and your family, and instruct you on what to do should a fire occur in your apartment. Aussi disponible en français sous le titre : La sécurité-incendie
65041	AE5	**Improving Your Security and Safety** This About Your Apartment fact sheet, intended specifically for occupants of multi-unit residential buildings, provides practical advice on how to protect yourself, your family, and your belongings. It highlights the types of security and safety features you may have in your building and how to use them effectively. Topics include, amongst others, proper locks for windows and doors, neighbourhood security, preventing falls from windows and balconies, combustion safety, and carbon monoxide. Aussi disponible en français sous le titre : Pour une meilleure sécurité chez soi

65297	AE6	**Dealing with Pests** Most people can relate to the surprise, shock and revulsion of coming across pests in their homes. This fact sheet, intended specifically for occupants of multi-unit residential buildings, will help you prevent and reduce infestations in your apartment by describing how insects enter homes and what they need to survive. Topics include pest proofing your apartment, Integrated Pest Management (IPM), and health concerns associated with pests and pesticides. Aussi disponible en français sous le titre : La lutte contre les parasites

ABOUT YOUR HOUSE - **NORTH SERIES**

VOTRE MAISON - **DOSSIER DU NORD**

The North About Your House series is a series specifically designed around day to day northern solutions as well as innovative northern models of building practices which work under cold climate conditions. In this series you will find examples of how to use structural panels in the high arctic, means to cleanse wastewater in the North as well as demonstrated ways of constructing a roof which can withstand northern conditions and how to choose a foundation system which will work in any of the northern communities.

Order no.	Series no.	Title
62303	North Series 1	Building with Structural Panels -- Repulse Bay
62304	Dossier du Nord	Maison à panneaux isolants de construction à Repulse Bay
62295	North Series 2	On-site Wastewater Reclamation Systems for the North
62297	Dossier du Nord 2	Installations de recyclage sur place des eaux usées dans le nord
62329	North Series 3	Snowshoe Inn, Fort Providence Co-generation Model
62330	Dossier du Nord 3	Modèle de cogénération du Snowshoe Inn, Fort Providence
62298	North Series 4	Residential Foundation Systems for Permafrost Regions
62299	Dossier du Nord 4	Fondations pour les bâtiments résidentiels construits sur le pergélisol
62154	North Series 5	Eagle Lake Healthy House
62155	Dossier du Nord 5	La maison saine d'Eagle Lake
62313	North Series 6	Arctic Hot Roof Design
62314	Dossier du Nord 6	Conception de toits chauds pour climat arctique
63050	North Series 8	How to Prevent Plumbing and Heating Vent Stack Freeze-up
63051	Dossier du Nord 8	Prévenir le gel des colonnes de ventilation de plomberie et des conduits d'évacuation de l'appareil de chauffage
63394	North Series 9	Fancoil Integrated Combination Heat and Domestic Hot Water Systems
63395	Séries du Nord 9	Installation de chauffage des locaux et de l'eau intégrée à un ventilo-convecteur

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Brief descriptions of CMHC research papers you may wish to obtain.

These research highlights are available in HTML and Adobe Acrobat format (pdf) on the CMHC web site at:

http://www.cmhc-schl.gc.ca/publications/en/rh-pr/index.html

Print copies can be obained by calling **1-800-668-2642**

Order no.	Series no.	TITLE
65104	06-114	Old North End, Saint John, New Brunswick Community Planning and Housing Charrette
65187	06-113	Green Roofs: A Resource Manual for Municipal Policy Makers
65100	06-112	Arviat Community and Housing Design Charrette
65259	06-111	Validation of an Onsite Wastewater Risk Assessment Model
65257	06-110	Impact of Water Softeners on Septic Tanks - Field Evaluation Study
65092	06-109	Occupancy-based Classification System for Design and Construction of Residential Basements
65245	06-107	The eKOCOMFORT Field Assessment Program
65035	06-104	Household Environmental Monitoring - A Strategy to Help Homeowners Reduce Their Environmental Impact
64994	06-103	Identifying and Removing Pollutants from Heat Recovery Ventilators
65002	06-102	Evaluation of Air Leakage Control Measures to Compartmentalize Newly Constructed Suites in a High- Rise Residential Building
64934	06-101	Green Phoenix Integrated Design Charrette for Sustainable Affordable Housing
64958	06-100	Performance Evaluation of the Almon Street Multi-Unit Residential Building
64942	05-120	Investigating Moisture in Seasonal Housing
64940	05-119	Energy and Water Consumption Load Profiles in Multi-Unit Residential Buildings
64911	05-117	Predicting Time to Fogging of Insulated Glass Units
64913	05-116	Nunavut Research 2003-2005
64908	05-115	Study of Poured-in Place Concrete Wall Assemblies in Coastal British Columbia
64855	05-114	Reduction of Airborne Particles in Houses with Occupants Having Respiratory Ailments

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Order no.	Series no.	TITLE
64904	05-113	Duct Leakage Tests in Small Diameter Ducting System
64853	05-112	Assessment of Suite Compartmentalization and Depressurization in New High-rise Residential Buildings
64806	05-111	Laboratory Depressurization Test for Residential Gas Appliances
64843	05-110	Remote Monitoring and Control of On-site Wastewater Treatment, Recycling, and Reuse Systems
63928	05-109	Initial Material Characterization of Straw Light Clay
63945	05-107	Fire Experience, Smoke Alarms and Sprinklers in Canadian Homes: CMHC Research to 2005
63669	05-106	"The Land We Live on is our Home" The 'Gameti Ko' Project Second Community-led Workshop
63876	05-105	Testing the Adhesion of Air- Barrier Membranes in Wall Assemblies
63848	05-104	Ice Damming Field Research
63836	05-103	Assessment of the Energy Performance of Two Gas Combo-Heating Systems
63838	05-102	Development of Micro-CHP Technology Assessment Capability at CCHT
63818	05-101	Effects of ECPM Furnace Motors on Electricity and Gas Use
63816	05-100	Effects of Thermostat Setting on Energy Consumption
63745	04-131	Water Reuse Standards and Verification Protocol
63741	04-130	Dry and Comfortable Floors in Existing Basements
63733	04-128	Dynamic Buffer Zone (DBZ) System Performance
63728	04-127	Comparison of Under-Floor Insulation Systems
63726	04-126	Update of Roof Truss Designs with Nailing Schedules
63641	04-125	Residential Sources of Lead
63677	04-124	Summary of Research on Water Resistive Barriers
63675	04-123	Assessing the Impact of Thickness on the Performance of Stucco Cladding
63673	04-122	Comparison and Analysis of Provincial Builder and Renovator Industry Programs
63635	04-121	Field Testing of "Spillage- Resistant" Appliances
63465	04-119	Diagnosing Attic Performance by Snow- and Frost-Melt Patterns

Order no.	Series no.	TITLE
63620	04-118	Performance of Sprayed Polyurethane Foam on Indoor Foundation Walls
63615	04-117	Analysis of Ventilation System Performance in New Ontario Houses
63612	04-116	Energy Needs and Availability in Housing
63571	04-115	Building Canada: Phase One
63555	04-114	Investigating Claims Against Home and Property Inspectors
63557	04-113	Installation Guide for Residential Wood I-Joist Floor Systems
63547	04-112	Canadian Home Inspectors and Building Officials National Initiative Phase II: Development of National Certification and Accreditation Models
63528	04-111	Characterizing the Condominium Population of the Greater Ottawa Area, 1969-2002
63540	04-110	Strategies for Reducing Building Energy Use Via Innovative Building Envelope Technologies
63511	04-109	Maximum Performance Testing of Popular Water-Efficient Toilet Models
63542	04-108	Garage Performance Testing
63503	04-107	Survey of In-Suite Space and Domestic Hot Water Heating Systems In Multi-Residential Buildings
63400	04-105	Field Testing of an Integrated Ventilation Space Conditioning System for Apartments
63413	04-104	Practical Measures for the Prevention of Basement Flooding Due to Municipal Sewer Surcharge
63407	04-103	House Dust: A Useful Tool To Assess Microbial Contamination In Homes
63390	04-102	Calgary Integrated Design and Sustainable, Affordable Housing Charrette
63365	04-101	Residential Combustion Spillage Monitoring
63376	04-100	Improved Make-up Air Supply Techniques
63382	03-134	Safe Housing for Lightly Contaminated Lands
63370	03-133	Residential Combustion Venting Failure - A Systems Approach
63374	03-131	The Canadian Residential Duct and Chimney Survey
63326	03-129	Monitoring the Performance of a Retrofitted Preserved Wood Foundation

Order no.	Series no.	TITLE
63333	03-128	Review of Hygrothermal Models for Building Envelope Retrofit Analysis
63328	03-127	Static and Dynamic Earthquake Testing of Rainscreen Stucco Systems for B.C. Residential Wood-Frame Construction
63339	03-125	Water Penetration Resistance of Windows - Study of Codes, Standards, Testing and Certification
63367	03-124	Water Penetration Resistance of Windows: Study of Manufacturing, Building Design, Installation and Maintenance Factors
63315	03-123	Integrated Community Solutions: Regina's Affordable, Sustainable Housing Design Charrette
63294	03-122	The Impact of Requiring HVAC System Design Submittal on System Performance
63280	03-121	Ventilation Systems for Multi-Unit Residential Buildings: Performance Requirements and Alternative Approaches
63243	03-119	Reduction of Air Intake Contamination in High-Rise Residential Buildings
63257	03-118	Investigation of a Ground-Source Heat Pump Retrofit to an Electrically Heated Multi-Family Building
63237	03-117	Influence of an Electronic Air Cleaner on Indoor Ozone
63225	03-116	Qualification of the Degree of Acoustic Comfort Provided by Multi-Family Buildings - Phase II
63233	03-115	Case Studies of Major Energy Retrofits
63208	03-114	Technology Roadmap for Intelligent Buildings
63223	03-113	Dawson City Demonstration Monitoring Northern Ventilation
63206	03-112	Guidelines for On-Site Measurement of Moisture in Wood Building Materials
63204	03-111	Comparison of Modeled and Monitored Performance of a Wall Insulation Retrofit in a Solid Masonry Building
63214	03-110	Integrated Design Charrette for a Sustainable UniverCity Community
63200	03-109	Proper Retrofit Furnace Sizing
63188	03-108	Re-Sale of Leaky Condos: Did the Buyer Know?
63194	03-107	Design of Durable Joints Between Windows and Walls
63192	03-106	Cooling Rates of Houses During Extended Power Failures
63190	03-105	Penetration of Outdoor Particles Into a Residence

Order no.	Series no.	TITLE
63,186	03-104	Indoor Particulate and Floor Cleaning
63,182	03-103	Incompatible Building Materials
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